

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWV 1,6 V 9

1. Edition

En

VE 4/9 F 2400 R 138

0 460 494 131

supersedes -  
company: VWV  
engine: 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-460/...

Test ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,9 - 3,3 mm		
1.2 Supply pump pressure	1500	4,9 - 5,5 bar (kgf/cm <sup>2</sup> )		
1.3 Full-load delivery without charge-air pressure	1500	33,0 - 34,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	475	6,0 - 10,0 cm <sup>3</sup> /1000 strokes		2,0
1.5 Start	100	min. 35,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2600	11,0 - 17,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1500 (2,4-3,8)	2400 6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	600 2,8-3,4		2400 7,0-7,6
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)		2400 55-138(40-153)

### 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2800 2600 2400 1500 600	max. 3,0 (10,0-18,0) 27,5-29,5 (26,3-30,7) (31,3-35,7) 21,5-24,5 (20,0-26,0)	
switch-off elect.	400	0	
Idle stop	475 650 1200	(4,0-12,0) max. 6,0 max. 5,0	
End stop	400 500	min. 18,0 max. 23,5	

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	2,7
*PH	1,8-2,4
A	
B	

### Observations

\*operating  
stroke (KSB)

2.4 Solenoid	max. cut-in voltage xxx min 10,0 V test voltage xxx rated voltage 12V.
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A1

A1

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7.83

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWV 1,6 W.2

1. Edition

En

VE 4/9 F 2400 R 138-1

0 460 494 140

supersedes -  
company: VWV  
engine: 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,9 - 3,3 mm		
1.2 Supply pump pressure	1500	4,9 - 5,5 bar (kgf/cm <sup>2</sup> )		
1.3 Full-load delivery without charge-air pressure	1500	33,0 - 34,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	450	6,0 - 10,0 cm <sup>3</sup> /1000 strokes		2,0
1.5 Start	100	min. 35,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2600	11,0 - 17,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1500 (2,4-3,8)	2400 6,1-6,9 (5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	600 2,8-3,4	2400 7,0-7,6	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40-153)	2400 55-138 (40-153)	

### 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2800 2600 2400 1500 600	max. 3,0 (10,0-18,0) 27,5-29,5 (26,3-30,7) (31,3-35,7) 21,5-24,5 (20,0-26,0)	
switch-off mech. elektr.	2400 400	0 0	
Idle stop	450 650 1200	(4,0-12,0) max. 5,0 max. 7,0	
End stop	400 500	min. 18,0 max. 23,5	
2.4 Solenoid	max. cut-in voltage xxx min. 10 V rated voltage 12V.		

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	2,7
*FH	1,8-2,4
A	
B	

### Observations

\*operating  
stroke (KSB)

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# Test Specifications Distributor-type Fuel-injection Pumps

**46**

WPP 001/4 VWV 1,6 V 8

1. Edition

En

VE 4/9 F 2400 R 138-2

0 460 494 147

supersedes -  
company: VWV  
engine: 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-460/

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,9 - 3,3 mm		
1.2 Supply pump pressure	1500	4,9 - 5,5 bar (kgf/cm <sup>2</sup> )		
1.3 Full-load delivery without charge-air pressure	1500	33,0 - 34,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	425	6,0 - 10,0 cm <sup>3</sup> /1000 strokes		2,0
1.5 Start	≤ 100	min. 35,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2600	11,0 - 17,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1500 (2,4-3,8)	2400 6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	600 2,8-3,4		2400 7,0-7,6
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)		2400 55-138(40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2800 2600 2400 1500 600	max. 3,0 (10,0-18,0) 27,5-29,5(26,3-30,7) (31,3-35,7) 21,5-24,5(20,0-26,0)	
switch-off elect.	400	0	
Idle stop	425 650 1200	(4,0-12,0) max. 6,0 max. 5,0	
End stop	400 500	min. 18,0 max. 23,5	
2.4 Solenoid	max. cut-in voltage XX min. 10,0 V test voltage XXX rated voltage 12V.		

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	2,7
*FH	1,8-2,4
A	
B	
Observations	
*operating stroke (KS8)	

A3

A3

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# Test Specifications Distributor-type Fuel-injection Pumps

**46**

WPP 001/4 VWV 1,6 V 7

1. Edition

En

VE 4/9 F 2400 R 138-3

O 460 494 148

supersedes-

company: VWV

engine: 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/..

Pre-stroke setting - mm

**Testoil-ISO 4113**

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,9-3,3 mm		
1.2 Supply pump pressure	1500	4,9-5,5 bar (kgf/cm <sup>2</sup> )		
1.3 Full-load delivery without charge-air pressure	1500	33,0-34,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	425	6,0-10,0 cm <sup>3</sup> /1000 strokes		2,0
1.5 Start	100	min. 35,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2600	11,0-17,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1500 (2,4-3,8)	2400 6,1-6,9 (5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	600 2,8-3,4		2400 7,0-7,6
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40-153)		2400 55-138 (40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2800 2600 2400 1500 600	max. 3,0 (10,0-18,0) 27,5-29,5 (26,3-30,7) (31,3-35,7) 21,5-24,5 (20,0-26,0)	
switch-off elektr.	400	0	
mach.	2400	0	
Idle stop	425 650 1200	(4,0-12,0) max. 5,0 max. 7,0	
End stop	400 500	min. 18,0 max. 23,5	
2.4 Solenoid	max. cut-in voltage xxx min. 10,0 V rated voltage 12V.		

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	2,7
*FH	1,8-2,4
A	
B	

## Observations

\*operating  
stroke (KSB)

A4

A4

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# Test Specifications

## Distributor-type

## Fuel-injection Pumps

En

VE 4/9 F 2250 R 149

Overflow temperature 45° C

0 460 494 138

 supersedes  
 company: VWW  
 engine: 086 T

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

**Testoil-ISC 4113**

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,8-4,2 mm	0,75 bar	
1.2 Supply-pump pressure	1500	5,5-6,1 bar (kgf/cm <sup>2</sup> )	0,75 bar	
1.3 Full-load delivery with charge-air pressure	600	23,5-24,5 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery without charge-air pressure	1500	43,5-44,5 cm <sup>3</sup> /1000 strokes	0,75 bar	2,5
1.4 Idle regulation	475	6,0-10,0 cm <sup>3</sup> /1000 strokes	0	2,0
1.5 Full-speed regulation	100	min. 35,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Start	2525	9,0-15,0 cm <sup>3</sup> /1000 strokes	0,75 bar	
1.7 Load-dependent port-closing				

### 2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min mm	1000 1,8-2,6 (1,5-2,9)	1500 (3,3-4,7)	2250 6,1-6,9 (5,8-7,2)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	600 3,3-3,9		2250 7,4-8,0
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40-153)		2250 55-138 (40-153)

### 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2750 2525 2250 1500 1000 600	max. 3,0 ( 8,0-16,0) 38,5-40,5 (37,3-41,7) (41,8-46,2) 33,5-34,5 (31,8-36,2) (21,0-27,0)	0,75 bar 0,75 bar 0,75 bar 0,75 bar 0,3 bar 0
switch-off			
electr.	400	0	
Idle stop	475 1200	( 4,0-12,0) max. 5,0	
End stop	400 500	min. 22,0 max. 30,0	
2.4 Solenoid	cut-in voltage	min. 10,0 V	
		rated voltage 12 V.	

### 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	4,4
** FH	1,8-2,4
XK	18,4-20,4
XL	8,6-12,0

### Observations

- \* LDA-stroke 4,0 mm  
Use adjusting nut  
(46) to correct.
- \*\* operating stroke  
(cold-start accel.)

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**En**

## 1. Edition

**supercedes**

company. VWW

**engine:** 086 T

**Overflow temperature 45° C**

**All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers**

### Test Instructions and Test Equipment

### Pre-stroke setting

- ۱۳۳۳

see VDT-W-460/..

**Tesol-ISO 4113**

checking values in brackets ( )

### 2.3 Fuel deliveries

### 3. Dimensions

for assembly  
and adjustment  
1 mm

### Observations

Manifold-pressure compensator stroke  
= 4.0 mm.

Correction at the  
adjusting nut.(46)

\*operating

**stroke (KSB)**

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWV 2,0 i 4

1. Edition

En

VE 5/10 F 2250 L 150

0 460 405 033

supersedes  
company/VWV  
engine: 153 T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm  $\pm$  0,02 (0,04)

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,1-3,5 mm	0,75 bar	
1.2 Supply pump pressure	1500	5,5-6,1 bar (kgf/cm <sup>2</sup> )	0,75 bar	
1.3 Full-load delivery without charge-air pressure	500	21,5-22,5 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery with charge-air pressure	1500	43,5-44,5 cm <sup>3</sup> /1000 strokes	0,75 bar	2,5
1.4 Idle speed regulation	375	6,0-10,0 cm <sup>3</sup> /1000 strokes	0	2,0
1.5 Start	100	min. 50,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	2525	9,0-15,0 cm <sup>3</sup> /1000 strokes	0,75 bar	
1.7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min mm	850 1,1-1,9(0,8-2,2)	1500 (2,6-4,0)	2250 5,4-6,2(5,1-6,5)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	500 3,2-3,8		2250 7,3-7,9
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)		2250 55-138(40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2700 2525 2250 1500 850 * 500	max. 3,0 ( 8,0-16,0) 37,0-39,0 (35,8-40,2) (41,8-46,2) 32,5-33,5 (30,8-35,2) (19,0-25,0)	0,75 bar 0,75 bar 0,75 bar 0,75 bar 0,3 bar 0
switch-off elektr.	400	0	
idle stop	375 450	max. 3,0 ( 4,0-12,0)	
End stop	400 500	min. 18,0 max. 25,0	
2.4 Solenoid	max. cut-in voltage	xxx min. 10 V	
	rated voltage	12V.	

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	-
KF	5,7-6,0
MS	1,7-1,9
SVS	4,2
A	
B	
Observations	
Adjust TAS only at full LDA pressure of 0.75 bar Manifold-pressure compensator stroke = 3,6mm Correction at the adjusting nut (46).	

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# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWV 2,0 i 5

1. Edition

En

VE 5/10 F 2250 L 150-1

O 460 405 034

supersedes-

company: VWV

engine: 153 T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm  $\pm$  0,02 (0,04)

see VDT-W-460/..

Test ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,1-3,5 mm	0,75 bar	
1.2 Supply pump pressure	1500	5,5-6,1 bar (kgf/cm <sup>2</sup> )	0,75 bar	
1.3 Full-load delivery without charge-air pressure	500	21,5-22,5 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery with charge-air pressure	1500	43,5-44,5 cm <sup>3</sup> /1000 strokes	0,75 bar	2,5
1.4 Idle speed regulation	375	6,0-10,0 cm <sup>3</sup> /1000 strokes	0	2,0
1.5 Start	~ 100	min. 50,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	2525	9,0-15,0 cm <sup>3</sup> /1000 strokes	0,75 bar	
1.7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min mm	850 1,1-1,9(0,8-2,2)	1500 (2,6-4,0)	2250 5,4-6,2(5,1-6,5)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	500 3,2-3,8		2250 7,3-7,9
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)		2250 55-138(40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2700 2525 2250 1500 850 * 500	max. 3,0 ( 8,0-16,0) 37,0-39,0 (35,8-40,2) (41,8-46,2) 32,5-33,5 (30,8-35,2) (19,0-25,0)	0,75 bar 0,75 bar 0,75 bar 0,75 bar 0,3 bar 0
switch-off mech. elektr.	2250 400	0 0	
Idle stop	375 450	( 4,0-12,0) max. 3,0	
End stop	400 500	min. 18,0 max. 25,0	
2.4 Solenoid	max. cut-in voltage XXXXXXX	xx min. 10 V rated voltage 12V.	

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	-
KF	5,7-6,0
MS	1,7-1,9
SVS	4,2
A	
B	
Observations	
	Adjust TAS only at full LDA pressure of 0.75 bar Manifold-pressure compensator stroke = 3,6mm Correction at the adjusting nut (46).

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A8

A8

# Test Specifications Distributor-type Fuel-injection Pumps

En

VE 6/10 F 2150 L 151

0 460 406 039

supersedes

company: VWV

engine: 087

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/.

Pre-stroke setting

mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,8-3,2 mm		
1.2 Supply pump pressure	1500	5,5-6,1 bar (kgf/cm <sup>2</sup> )		
1.3 Full-load delivery without charge-air pressure	1500	28,0-29,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	375	6,0-10,0 cm <sup>3</sup> /1000 strokes		2,0
1.5 Start	≈ 100	min. 35,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2400	9,0-15,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	1000 0,7-1,5 (0,4-1,8)	1500 (2,3-3,7)	2150 4,9-5,7 (4,6-6,0)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	600 3,0-3,6		2150 7,3-7,9
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40-153)		2150 55-138 (40-153)

### 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2600	max. 3,0	
	2400	(8,0-16,0)	
	2150	23,0-25,0 (21,8-26,2)	
	1500	(26,3-30,7)	
	750	25,0-28,0 (23,5-29,5)	
switch-off elect.	400	0	
Idle stop	375 - 450	max. 3,0 (4,0-12,0)	
End stop	400 500	min. 25,0 max. 27,0	
2.4 Solenoid	max. cut-in voltage    xxx min.    10 V rated voltage 12V		

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	6,4-6,7
MS	1,4-1,6
SVS	max. 2,6
• FH	1,8-2,4
A	
B	

### Observations

\*operating  
stroke (KSB)

# Test Specifications

## Distributor-type

## Fuel-injection Pumps

VE 6/10 F 2150 L 152

0 460 406 040

supersedes

company: VW

engine: 087 T-LT

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting — mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,3-2,7 mm	0,75	
1.2 Supply pump pressure	1500	5,9-6,5 bar (kgf/cm <sup>2</sup> )	0,75	
1.3 Full-load delivery without charge-air pressure	600	23,5-24,5 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery with charge-air pressure	1500	41,5-42,5 cm <sup>3</sup> /1000 strokes	0,75	2,5
1.4 Idle speed regulation	375	6,0-10,0 cm <sup>3</sup> /1000 strokes	0	2,0
1.5 Start	100	min. 35,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	2400	9,0-15,0 cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent start of delivery	—			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min mm	1000 0,5-1,3(0,2-1,6)	1500 (1,8-3,2)	2150 4,4-5,2(4,1-5,5)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	600 3,5-4,1		2150 7,6-8,2
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)		2150 55-138(40-153)

### 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2600	max. 3,0	0,75
	2400	(8,0-16,0)	0,75
	2150	35,0-37,0 (33,7-38,3)	0,75
	1500	(39,5-44,3)	0,75
	750 *	32,5-33,5 (30,7-35,3)	0,3
	600	(21,7-26,3)	0
elect. <sup>switch-off</sup>	70-400	0	
Idle stop	450	max. 3,0	
	375	(4,0-12,0)	
End stop	400	min. 25,0	
	500	max. 27,0	
2.4 Solenoid	max. cut-in voltage xxx min. 10,0 V rated voltage 12V.		

### 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,0-1,2
SVS FH	3,8 1,8-2,4
A	
B	
Observations Manifold-pressure compensator stroke = 4,5 mm Correction at the adjusting nut. (46) *operating stroke (KSB)	



# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 HOR 2,0 b

4. Edition

En

PES 2 A 80D 410/3 RS 1329 RSV 400-1250 A08 1123 L  
Komb.-Nr. 0 400 462 053

supersedes 8.82  
company: Holder  
engine: VD 6001/2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers  
Port closing difference between control-rod travel 9 and max. = 9-9,9°

## A. Fuel Injection Pump Settings

Port closing at prestroke (1,65-1,85) mm (from BDC)  $R_{W=7,5-10,5mm}$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,7-9,8	6,0-6,1	0,2 (0,35)			
400	6,7-6,9	0,9-1,5	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 20	400	6,5	-	-
	X = 3,75						100	min 19,5		
							400	6,7-6,9		
							505-565	= 2,0		
ca. 46	8,7	1290-1300								
⑤	4,0	1330-1360								
	1495	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1250	59,5-60,5 (58,0-62,0)	1290-1300*	-	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

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Testoil-ISO 4113

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# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 3,1a

2. Edition

En

PES 3 A 80 D 320 RS 1338 RSV 300-1000 A 7 B 505-1R  
Komb.-Nr. 0 400 473 086

supersedes 8.82

company: MWM

engine: D 226-3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>2,2-2,3</sup>  
(2,25-2,35) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
980	9,7-9,8	4,8-4,9	0,2(0,35)			
300	7,4-7,6	0,8-1,4	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 27	300	7,0	-	-
	X = 6,0						100	min. 19,5		
							300	7,4-7,6		
⑤ 63	8,7	1020-1030					395	455=2,0		
	4,0	1050-1080								
	1205	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	
1	2		4	5	6	7	8	9	
980	48,0-49,0 (46,5-50,5)	1020-1030*	600	40,5-43,5 (39,0-45,0)	100	93,5-109,5 bei 19,5-2,0 mm RW	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

# Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 MAN 9,7 L2

3. Edition

En

PES 6 A 95 D 410 RS 2108

EP/RSV 200-1100 A1 B 607L

supersede 8.80

company MAN - RABA

engine D 2156 ..

200-1050 A1 B 607L  
450-1050

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	8,4 - 9,4				
	6	4,0 - 5,0				
	15	16,6 - 17,8				
200	9	5,9 - 6,9				

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

200-1100

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 60	1100 1150 1180	16,0 11,0 6,4	without auxiliary spring			ca. 24	200	6,0	1080	0
②a	1140 1180 1300	10,4-12,8 4,0-8,4 0,3-1,0					100 200 300 450	19 - 21 5,7-6,3 2,2-4,1 0 - 1	250	1,2 - 1,8

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	93,5 - 96,4	1140-1150*				100	min. 20,0 mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.83

Testoil-ISO 4113

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**B. Governor Settings**

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11
ca. 60	1050	16,0	without auxiliary spring			ca. 26	200	6,0	1030	0
	1120	9,8					250	1,2-1,8		
	1160	5,0								
	with auxiliary spring		100	19-21						
			200	5,7-6,3						
			300	2,0-3,9						
1120	8,0-11,8	420	0 -1,0							
1180	2,0- 4,5									
1260	0,3- 1,0									

The numbers denote the sequence of the tests

**C. Settings for Fuel Injection Pump with Fitted Governor**

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to rev/min						
rev/min	cm <sup>3</sup> /1000 strokes	3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2		4	5	6	7	8	9
1100	93,5-96,4	1140-1150*	-	-	100	min. 20,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**Testoil-ISO 4113****B. Governor Settings**

450-1050

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.60	1050	16,0	without auxiliary spring			ca.32	450	6,0	1050	0
	1100	11,7					300	0,8-1,4		
	1150	6,5								
	1120	8,5-11,0	with auxiliary spring						100	19-21
	1200	2,1- 4,7							450	5,7-6,3
1300	0,3- 1,0	550				2,3-4,0				
⑤							580	0-1,0		

The numbers denote the sequence of the tests

**C. Settings for Fuel Injection Pump with Fitted Governor**

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						
rev/min	cm <sup>3</sup> /1000 strokes	3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2		4	5	6	7	8	9
1050	133,5-139,5	1080-1090*	750	135,5-139,5	100	min. 20,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1A

# Test Specifications Fuel Injection Pumps (1A) and Governors

**40**  
WPP 001/4 MAN 9,7 1 5  
1. Edition

PES 6 A 95 D 410 RS 2108 RSV550-1100 A 1 B 60/ L En

Komb.-Nr. 0 400 876 235

supersedes  
company  
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

1,7-1,8

Port closing at prestroke (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2+0,1	9,4-9,5	0,3(0,6)			
550	5,9-6,1	1,6-2,2	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.29	550	5,5	1100	10,2-10,3
	X = 2,25						100	min.19,5	500	10,2-10,4
ca.56	9,2	1140-1150					500	5,9-6,1	370	11,3-11,9
2a	4,0	1155-1185					660-720	= 2,0		
	1350	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	94,0-95,0 (92,0-97,0)	1140-1150*	-	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 TOP 19,0 a

1. Edition

En

PE 12 A 85 D 610 RS 2141

RSV 200-1100 A1B 253 DL

supersedes -

company

Torpedo

engine

T 519

1-12- 4- 9 - 2 - 11- 6 - 7 - 3 - 10- 5 - 8

0-45-60-105-120-165-180-225-240-285-300-345°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,15-2,25$  mm (from BDC) RW = 9,0-12,0 mm  
(2,10-2,30)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0,1	8,7-8,8	0,3(0,45)			
500	12,8+0,1	8,2-8,4				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	200	5,5	1000	12,4-12,5
	X = 6,0						100	min. 19,0	500	12,8-12,9
							200	5,9-6,2	800	12,7-12,9
ca. 55	11,4	1040-1050					420-480	= 2,0		
2a	4,0	1155-1185								
	1250	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	5	6	7	8	9	Control rod travel mm 9
1000	86,5-87,5 (84,5-89,5)	1040-1050*	500	82,0-84,0 (80,0-86,0)	-	-	-	-	-
			700	87,5-90,5 (85,5-92,5)					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MB 5,7 q 5

3. Edition

PES 6 A 90 3 410 RS 2293 RSV 350-1400 A 0 B 788 DL

Komb.-Nr. 0 400 876 258

H = 22,5 mm

supersedes 8.82  
company Daimler-Benz  
engine OM 352 A  
124 kW (168 PS)  
Unimog

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 mm (from BDC)  
(2,10-2,30)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,3+0,1	7,4 - 7,5	0,3(0,45)			
350	6,7-6,9	0,5 - 1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	19-21	350	6,3	1400	11,3-11,4
	x = 5,0								500	11,5-11,6
67-70	10,3	1440-1450					100	min. 19,0		
	4,0	1500-1530					350	6,7-6,9		
2a	1600	0,3-1,7					530-590	= 2,0		
							700	max. 1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Full-load stop		<b>(6)</b> Rotational-speed limit	<b>(3a)</b> Fuel delivery characteristics		Starting fuel delivery Idle		<b>(5)</b>	<b>(4a)</b> Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							Control rod travel mm
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	9	
LDA 1400	0,5 bar 74,0-75,0 (72,0-77,0)	1440-1450*	LDA 500	0,5 bar 62,0-64,0 (60,0-66,0)	100	13,7-14,3 mm RW	-	-	
			LDA 500	0 bar 54,0-56,0 (52,0-58,0)					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

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Testoil-ISO 4113

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

MB 5,7 q 5 -2-

Testoil-ISO 4113

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES6A.. RS 2293 with ..AOB 788 DL	0,50	0 0,29	10,8 - 10,9 11,1 - 11,2 11,5 - 11,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at 0,4 - 0,5 bar  
Unlocking at 0,15 - 0,25 bar



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 q 8

1. Edition

En

PES 6 A 90 D 410 RS 2293

RSV 350-1200 AOB 1101-1 L

Komb.-Nr. 0 400 876 316

supersedes

company Daimler-Benz

engine OM 352

70 kW (95 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,15-2,25}{(2,10-2,30)}$  mm (from BD RW = 9,0-12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	8,4-8,5	4,5-4,6	0,3(0,45)			
350	7,1-7,3	0,8-1,2	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	-	350	7,2	1200	8,4-8,5
	x = 4,0						350	7,1-7,3	600	9,8-9,9
ca. 65	7,4	1225-1235					475-535	= 2,0	800	9,5-9,7
	4,0	1290-1320							1000	8,9-9,2
2a	1400	0-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle		Control rod travel	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	cm <sup>3</sup> /1000 strokes 5	6	rev/min 7	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
1200	45,0-46,0 (43,0-48,0)	1220-1230*	600	45,0-47,0 (43,0-49,0)	100	78,0-88,0 = 14,9-15,3 mm RW		-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

7.83

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# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 q 3

6. Edition

En

40

**Testoil-ISO 4113**

PES 6A 90D 410RS 2293 RSV 350-1300A0B1105DL(1)

Komb.-Nr. 0 400 876 260

supersedes 2.82

company: Daimler Benz

OM 352

engine: 92 kW(125PS)(1)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

 Port closing at prestroke (2,10 - 2,30) mm (from BDC)  
 2,15 - 2,25

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	9,5-9,6	6,2 - 6,3	0,3(0,45)			
350	6,3-6,5	0,4 - 0,9	0,2(0,4)			
800	10,2+0,2	C.Sp. 4-5	0,4(0,55)			
500	10,3+0,1					

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca.28	350	5,9	1300	9,5-9,6
	X =	5,5					100	min.19,0	800	10,2-10,4
⑤ ca. 64	8,5	1340-1350					350	6,3-6,5	500	10,3-10,4
	4,0	1380-1410					700	max.1,0		
	1550	0,3-1,7				490	550	= 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat. Note: changed to ... rev/min 3	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2		4	5	6	7	8	9
1300	62,5 - 63,5 (60,5 - 65,5)	1340-1350*	800	60,0 - 62,0 (58,0 - 64,0)	100	79,25-89,25 bei 13,7- 14,3 mm RW	350	6,4
			500	54,0 - 56,0 (52,0 - 58,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

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# Test Specifications

## Fuel Injection Pumps (1A)

### and Governors

40

WPP 001/4 KHD 9,6 k

1. Edition

En

PES 6 A 95 D 410 RS 2416

RSV 325-1100 A 8 B 2040 L

Komb.-Nr. 0 400 876 279

supersedes -

company KHD

engine BF6L413 FRC

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{1,75-1,85}{(1,70-1,90)}$  mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	10,6+0,1	11,2-11,4	0,3 (0,6)			
325	5,4-5,6	0,9-1,5	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 16	325	5,5	1100	10,6-10,7
	X = 4,0						100	min. 19,0	550	10,6-10,8
							325	5,9-6,1	375	11,8-12,4
							440-500	= 2,0		
ca. 49	9,6	1140-1150					600	max. 1,0		
2a	3,7	1165-1195								
	1330	0,3-1,7								

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery		5 Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to . ) rev/min				Idle			
rev/min	cm <sup>3</sup> /1000 strokes			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA	0,5 bar	1140-1150*		LDA	0,5 bar	100	120,0-130,0	0	-
1100	111,5-113,5			900	114,0-117,0		= 13,4 -		
	(109,5-115,5)				(112,0-119,0)		14,0 mm		
				LDA	0 bar		RW		
				500	77,5-80,5				
					(75,5-82,5)				

Checking values in brackets

\* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

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# D. Adjustment Test for Manifold Pressure Compensator

KHD 9,6 K

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES6A..RS2416 + RSV..ABB 2040L	0,24	0,49 0,35 0	9,6-9,9 10,6-10,7 10,3-10,4 9,5-9,6

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 GMC 7,8 a

1. Edition

En

PES 6 A 90 D 410 LS 2436 RSV 400-1250 A2B 725 DL

1 - 6 - 5 - 4 - 3 - 2

Komb.-Nr. 0 400 876 215

supersedes -  
company GMC  
engine DH-478  
110 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $4,0 - 4,1$  mm (from BDC)  
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,0-9,1	5,2-5,5				
	12,0+0,2	8,0-8,8				
200	9,0-9,2	2,3-3,1				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 48	1250 1350 1400	16,0 7,0 1,8	without auxiliary spring with auxiliary spring			ca. 19	400 200 400 550 700	5,5 19,0-21,0 5,2-5,8 1,5-3,4 0-1,0	1230 800 500	0 0,5-0,7 0,8-1,0
2a	1300 1360 1530	10,8-12,5 4,1-7,5 0,3-1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... ) rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
rev/min 1	cm <sup>3</sup> /1000 strokes 2								
1250	71,5-72,5 (69,5-74,5)	1280-1290*	500	60,5-63,5 (58,5-65,5)	100	mind. 99,0	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

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Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 12,7 r  
1. Edition

En

PE 8 A 95 D 410 LS 2451  
Komb.-Nr. 0 400 673 040

RSV 300-1325 A 8B 1002  
Mercedes-Benz  
company KHD  
engine F 8 L 413 F

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

(1) 173 kW (235 PS) bei  $n=2650\text{min}^{-1}$   
(2) 157 kW (213 PS) bei  $n=2300\text{min}^{-1}$

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,0-2,1$   
(1,95-2,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1325	9,7-9,8	9,2-9,4	0,3(0,6)			
300	5,9-6,1	0,9-1,5	0,5(0,9)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control:	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0 X = 4,75	-	-	-	ca. 20	300	6,0	1325	9,7-9,8
ca. 63	8,7	1365-1375					100	min 19,0	500	10,0-10,1
2a	4,0	1420-1450					300	5,9-6,1		
	1575	0,3-1,7					520-580	= 2,0		
							700	max. 1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
(1) 1325	91,5-93,5 (89,5-95,5)	1365-1375*	-	-	-	100	116,5-127,5 = 14,0-14,4 mm RW	-	-
(2) 1150	83,0-85,0 (81,0-87,0)	1190-1210*							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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8.83

A24

A24

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 6,2 c 2

1. Edition

En

PES 6 A 90 D 320/3 RS 2464-1

RSV 325-1200 AOB 2182 R

supersedes MWM

company TD 226-6

engine: 107 kW

Komb.-Nr. 0 400 866 115

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 2,15-2,25 \\ (2,10-2,30) \end{matrix}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,6+0,1	7,5-7,6	0,3(0,45)			
325	7,4-7,6	0,5-1,5	0,25(0,4)			

Adjust the fuel delivery from each outlet according to the values in

Port closing difference between control-rod travel 9mm  
and max. = 3,5 - 4,5° camshaft

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.20	325	7,0	1180	10,6-10,7
	X =						325	7,4-7,6	500	11,5-11,6
							520-580	= 2,0	875	11,0-11,2
ca.46	9,6	1240-1250								
2a	4,0	1300-1330								
	1460	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)									
rev/min	cm³/1000 strokes	rev/min	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8			9
LDA 1200	0,7 bar 74,5-75,5 (72,5-77,5)	1240-1250*		LDA 500	0 bar 59,5-60,5 (57,5-62,5)	100	113,0-123 (110,0-126,0) = 19,5- 21,0 mm RW	0 - (0)			-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

# D. Adjustment Test for Manifold Pressure Compensator

MWM 6,2 c 2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6A..RS2464-1 + RSV..A0B2182R	0,70	0 0,14 0,13	11,5-11,6 11,0-11,1 11,3-11,4 11,1-11,3

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)



# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 DEE 7,6 c 1

1. Edition

En

PES 6 A 95 D 410 RS 2522 RSV 400-1100 A 2 B 2009 DL

Komb.-Nr. 0 400 876 268

Use overflow valve 1 413 385 007

Suction-gallery pressure 1,5 bar

supersedes

company: John Deere

engine 6466 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,85-1,95  
(1,80-2,00) mm (from BDC) cyl. 1;

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2+0,1	9,6 - 9,8	0,3			
400	6,1-6,3	1,2 - 1,6	0,3			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Port closing mark 15,5° camshaft after port closing of cylinder 1.

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	400	5,6	1100	10,2+0,1
	x =								650	11,1+0,1
ca. 48	9,2	1145-1155					100	19,0-21,0		
	5,1	1200-1230					400	5,9-6,1		
2a	1300	0,3-1,7					480-540	= 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational speed limit Note: changed to ... rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
rev/min 1	cm <sup>3</sup> /1000 strokes 2		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	1,2 bar 95,0- 98,0 (93,0-100,0)	1145-1155*	LDA 650	1,2 bar 104,0-108,0 (101,0-111,0)	100	162-182	-	-
			LDA 500	0 bar 74,0-78,0 (71,0-81,0)	400	12,0-16,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

Testoil-ISO 4113

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# D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 c 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2522 + RSV..A2B2009DL	0,24	0,14	10,9 - 11,0 10,3 - 10,4

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DLE 7,6 C

1. Edition

En

PES 6 A 95 D 410 RS 2522 RSV 400-1100 A 2 B 2009-1 L

supersedes  
company John Deere  
engine 6.466 TL

Kom.-Nr. 9 400 230 041

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,85-1,95  
(1,8-2,0) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,5-9,6	8,7-8,9	0,3			
400	5,7-5,9	1,2-1,6	0,3			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min 7 8 9			3 Torque control Control rod travel rev/min mm 10 11	
Loose	Control rod travel mm 2	Control rod travel mm rev/min 3								
	800	0,3-1,0	-	-	-	ca. 21	400	5,2	1100	9,5
ca. 48	8,5	1145-1155					100	min. 19,0	750	10,3-10,6
2a	4,0	1195-1225					400	5,6-5,8	500	9,5-9,6
	1300	0,3-1,7					480-540	= 2,0		
							650	max. 1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 4a Idle stop Control rod travel mm 8 9	
	cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7		
LDA 1100	0,7 bar 87,0-89,0 (85,0-91,0)	1145-1155*		LDA 750	0,7 bar 97,5-101,5 (95,0-104,0)	100	16,2-18,2 = 21 mm RW	-	-
				LDA 500	0 bar 74,0-78,0 (71,0-81,0)	400	12,0-16,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

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Testoil-ISO 4113

# D. Adjustment Test for Manifold Pressure Compensator

Dee 7,6 c -2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: mm (1) diminution difference
PES 6A..RS 2522 + RSV..A2 B 2009-1 L	0,24	0,14	10,2-10,3 9,6-10,0

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 8,3i

4. Edition

En

supersedes 11.82

company: DAF

engine: DH 825

Testoil-ISO 4113

PE 6 A 90 D 410 RS 2524 RQ 225/1200 AB 1008 L  
Komb.-Nr. 0 400 646 251

Specifications apply to test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

(2,25-2,45)

Port closing at prestroke

2,30-2,40

RW9

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,4-9,5	7,0-7,1	0,3(0,45)			
225	6,5-6,7	0,9-1,5	0,2(0,4)			
Port closing difference between control-rod travel 9mm and max. = 4,5 - 5,5° camshaft						

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
650	19,2-20,8	650	20,0	8,4	1245-1260	225	8,7	100	min. 10,2	-	-
VH = max. 46°				4,0	1325-1355			225	8,6 - 8,8		
				1500	0 - 1,0			410-450	2,0		
								550	max. 1,0		

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm <sup>3</sup> /1000 strokes 2		Control rod stop rev/min 3	Fuel delivery characteristics rev/min 4 cm <sup>3</sup> /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm <sup>3</sup> /1000 strokes/mm 7
1000	70,0 - 71,0 (68,0 - 73,0)	600	-	-	100
					128,0-138,0 (125,0-141,0) = 19,5 - 21,0 mm RW

Checking values in brackets

B7

B7

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6.83

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 8,3 i 1

5. Edition

En

**Testoil-ISO 4113**

PE 6 A 90 D 410 RS 2524

RSV 250-1200 A 5 B 2012 DL supersede 8.82

company: DAF

Cold start test on EP/RSV governor according to Service

engine: DH 825

Information. Specifications apply to test tubing 1 680 750 015.

Nr. 0 400 676 151

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

(2,25-2,45)

Port closing at prestroke

2,30-2,40 RW 9 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,4-9,5	7,0 - 7,1	0,3(0,45)			
250	6,5-6,7	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.16	250	5,5	1000	9,4-9,5
	X	3,0							400	9,4-9,6
							250	5,9-6,1	300	9,5+0,5
							580-640	2,0		
⑤ ca. 49	1240-1250 = 8,4									
	1260-1290 = 4,0									
	1480 = 0,3-1,7									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting, fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1000	70,0 - 71,0 (68,0 - 73,0)	1240-1250*	-	-	100	128,0-138,0 (125,0-141,0) = 19,5-21,0 mm RW	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 x 6  
2. Edition

En

PES 6 A 90 D 410 RS 2569 RSV 350-750 A08 741 L  
Komb.-Nr. 0 400 876 300

supersedes 11.82  
company Daimler-Benz  
OM 352  
engine 52 kW (71 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,25-2,35  
(2,20-2,40) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	11,2+0,1	5,4 - 5,5	0,3 (0,45)			
350	7,4-7,6	0,5 - 1,1	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed		3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10
100se	800	0,3-1,0	-	-	-	ca.15	350	7,5	-
	x = 2,0						100	min.19,5	
							420-480	= 2,0	
								**	
ca.26	10,2	750-755					550	max. 1,0	
2a	4,0	788-801							
	835	0,3-1,7							

\*\* Set auxiliary idle spring at 2.0 mm control-rod travel.  
The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
700	54,0-55,0 (52,0-57,0)	750-755	-	-	-	100	78,0-88,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 3,8 n 9

3. Edition

En

PES 4 A 90 D 410 RS 2570

RQV 300-1400 AB 1111-3L

Komb.-Nr. 0 400 844 081

supersede 82

company Daimler-Benz

engine OM 314

57 kW (77 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,25-2,35}{(2,20-2,40)}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,5+0,1	5,9 - 6,0	0,3(0,45)			
300	8,6-8,8	1,1 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca. 24	100	min. 10,2	250	0,7-0,9
ca. 63	9,5	1440-1450					300	8,6-8,8	630	4,8-4,9
	4,0	1535-1565						545-605 = 2,0	1020	5,3-5,4
	1650	0 - 1,0							1400	7,7

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	59,0-60,0 (57,0-62,0)	1440-1450*	400	44,0-46,0 (42,0-48,0)	100	71,0-81,0 (58,0-84,0)	1400	10,5+0,1
							400	11,4+0,1
							600	11,1+0,2
							1000	10,8+0,3
					220 (240)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

Testoil-ISO 4113



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 3,8 n 10

1. Edition

En

PES 4 A 90 D 410 RS 2570  
Komb.-Nr. 0 400 874 237

RSV 350-1300 A 2 B 1126-2 L

superseded by Daimler-Benz  
company OM 314  
engine 55 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,25-2,35}{(2,20-2,40)}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,2+0,1	6,5-6,6	0,3(0,45)			
350	8,9-9,1	0,9-1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-		350	8,5	1300	11,2-11,3
	x = 4,0						100	min. 19,5	500	11,9-12,1
							350	8,9-9,1	700	11,5-11,8
							595-655	=2,0		
ca. 46	10,2	1340-1350								
2a	4,0	1420-1450								
	1550	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	cm <sup>3</sup> /1000 strokes 5	6	rev/min 7	cm <sup>3</sup> /1000 strokes 8	rev/min 9	Control rod travel mm 10
1300	65,0-66,0 (63,0-68,0)	1340-1350*	500	53,0-57,0 (51,0-59,0)	100	78,0-88,0 (75,0-91,0)	350	8,5 **	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

\*\* Adjusting the idle-speed auxiliary spring

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Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 DAF 8,3 n 1

2. Edition

En

supersedes 8.82

company: DAF

engine: DH 825

PE 6 A 95 D 410 RS 2575 RSV 250-1200 A5B 2151 L

Komb.-Nr. 0 400 676 171

Specifications apply to test tubing 1 680 750 015

See Service Information VDT-I-DAF 004.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,0 - 2,1$  mm (from BDC)  
(1,95-2,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1200	10,4+0,1	7,3 - 7,5	0,35(0,6)			
250	6,0-6,2	0,7 - 1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	ca. 24	250	5,6	1200	10,5+0,1
	X =	5,0					250	6,0-6,2	500	11,1+0,1
							635-695	= 2,0	800	11,1+0,1
									940	10,7+0,3
⑤ ca. 58	9,4	1240-1250								
	4,0	1340-1370								
	1505	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1200	73,0-75,0 (71,0-77,0)	1240-1250*		800	74,5-77,5 (72,0-80,0)	100	121,5-131,5 bei 19,5- 21,0 mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

Testoil-ISO 4113

B12

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 8,3 n 2

1. Edition

En

PE 6 A 95 D 410 RS 2575 Y RSV 250-750 A 7 B 2124 L  
Komb.-Nr. 0 400 676 172

supersedes -  
company DAF  
engine DHTD 825

Specifications apply to test tubing 1 680 750 015  
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 2,0-2,1 \\ (1,95-2,15) \end{matrix}$  mm (from Bsp) RW = 7,5 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
	2	3	4	2	3	6
750	12,5+0,1	10,1-10,3	0,4(0,6)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Port closing difference between control rod travel 9 mm and max. = 3 - 4° camshaft

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
lose	800	0,3-1,0	-	-	-	ca. 19	250	6,1	-	-
	x = 4,25						250	6,0-6,2		
							260-320	2,0		
ca. 45	11,5	770-780						**		
2a	4,0	795-815								
	995	0,3-1,7								

Set idle-speed auxiliary spring at 2,0 mm control-rod travel, then 1/2 turn back.  
The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
750	100,5-102,5 (98,5-104,5)	770-780*		-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

B13

B13

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6,1 K 2

3. Edition

En

PES 6 A 85 D 410 RS 2592

RQV 300-1250 AB 1158 L

Komb.-Nr. 0 400 846 497

supersedes 5.83

company: KHD

engine: BF 6 L 913

GMC-Fahrzeug

118 kW (160 PS)

/ 2500 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>2, 2-2,3</sup>  
(2, 15-2,35) mm (from BDC) 9,0-12,0 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,5+0,1	8,4-8,5	0,3 (0,45)			
300	8,3-8,5	1,0-1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1290	15,2-17,8	-	-	-	ca.17	100 300	min.10,2 8,3-8,5	250 580 920 1250	0,5-0,8 3,6-3,7 5,3-5,4 8,1
ca. 66	11,5 4,0 1500	1290-1300 1375-1405 0 - 1,0				450-575 ③a				

Torque control travels = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min 1		Rotational-speed limitation intermediate speed rev/min 3		Fuel delivery characteristics high idle speed rev/min 4		Starting fuel delivery idle switching point rev/min 6		Torque-control travel rev/min 8	
cm <sup>3</sup> /1000 strokes 2	cm <sup>3</sup> /1000 strokes 5	cm <sup>3</sup> /1000 strokes 3	cm <sup>3</sup> /1000 strokes 5	cm <sup>3</sup> /1000 strokes 7	cm <sup>3</sup> /1000 strokes 9	cm <sup>3</sup> /1000 strokes 7	cm <sup>3</sup> /1000 strokes 9	Control rod travel mm 9	Control rod travel mm 9
LDA	0,7 bar	1290-1300*	LDA 800	0,7 bar 80,5-82,5 78,0-85,0)	100	102,0-112,0 (99,0-115,0) = 16,9-17,3 mm RW	1250 500 800 1000 1100	12,5+0,1 13,2+0,1 13,2+0,1 12,9+0,2 12,7+0,3	
1250	83,5-84,5 (81,5-86,5)		LDA 500	0 bar 59,0-61,0 56,5-63,5)					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

Testoil-ISO 4113

# D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 k 2 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 A..RS 2592 + RQV..AB 1158 L	0,70	0 0,48 0,33	13,2 - 13,3 11,8 - 11,9 12,8 - 12,9 11,9 - 12,1

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6,1 k 3

2. Edition

En

PES 6 A 85 D 10/3 RS 2592 RQV 300-1250 AB 1188 L  
Komb.-Nr. 0 400 836 028

superseded 6.83  
KHD  
company BF 6 L 913  
engine 118 kW/2500 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3  
(2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,0+0,1	8,9-9,0	0,3(0,5)			
300	6,9-7,1	0,9-1,5	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm rev/min ②a 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③	rev/min 10	mm 11
max.	1290	15,2-17,8	-	-	-	ca. 13	300	6,9-7,1	325	1,5-1,7
ca. 65	11,0 4,0	1290-1300 1375-1405				355-470			850	4,9-5,1
						③a			1150	7,1-7,3
									1400	9,9

Torque control travel a = 0,8 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1250	0,7 bar 88,5-89,5 (86,5-91,5)	1290-1300*	LDA 500	0,7 bar 73,0-75,0 (70,5-77,5)	100	110,0-120,0 (107,0-123,0) =17,1-17,5 mm RW	1250 500 775 1025	12,0+0,1 12,8+0,1 12,5+0,2 12,1+0,3
			LDA	0 bar 59,0-61,0 (57,0-63,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# D. Adjustment Test for Manifold Pressure Compensator

- 2 -

KHD 6,1 k 3

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2592 + RQV..AB 1188 L	0,70	0 0,26 0,19	12,8-12,9 10,9-11,1 12,4-12,5 11,9-12,1

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

WPP 001/4 MB 5,7 v 11

2. Edition

En

PES 6 A 90 D 410 RS 2596

RSV 350-1400 AOB 1141 L

Komb.-Nr. 0 400 876 293

supersedes 8.82

company Daimler-Benz

engine OM 352 A

123 kW (157 PS) (1)

Schmidt rotary (2)

snow plough for  
high altitudes

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 mm (from BDC)  
(1,95-2,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	12,3+0,1	7,9-8,0	0,3(0,45)	9,8-9,9	5,4-5,6	
350	7,9-8,1	0,9-1,5	0,2(0,4)	7,9-8,1	0,9-1,5	

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	max. 14				
	x = 5,75						350	7,9-8,1		
							580-640	= 2,0		
ca. 60	11,3	1420-1430								
2a	4,0	1520-1550								
	1680	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to )							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1380	(1) 0,7 bar 79,0-80,0 (77,0-82,0)	1420-1430*		LDA 600	0,7 bar 76,5-79,5 (74,5-81,5)	100	78,0-88,0 16,4 - 16,8 mm RW	-	-
				LDA 500	0 bar 51,5-52,5 (49,5-54,5)				

Checking values in brackets

\* 1 mm less control rod travel than col 2

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6.83



The numbers denote the sequence of the tests

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 31	350	8,0	1200	9,8-10,0
	x	6,0					100	19,0-21,0	650	11,3-11,5
ca. 74	8,8	1440-1450					350	7,9-8,1		
②a	4,0	1470-1500					440 -	490 = 2,0		
	1635	0,3-1,7					600	0,3-1,0		

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
(2) LDA 1380	0,7 bar 54,5-56,5 (52,5-58,5)	1440-1450*		LDA 1000	0,7 bar 60,2-62,2 (58,2-64,2)	100	78,0-88,0 16,4 - 16,8 mm RW	-	-
				600	65,2-67,2 (63,2 69,2)				
				LDA 500	0 bar 53,0-55,0				

Checking values in brackets

(51,0-57,0)

\* 1 mm less control rod travel than col. 2

# Testoil-ISO 4113

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A RS 2596		0,70	13,3 - 13,4
(1)	0,52	0	11,4 - 11,5
		0,21	13,0 - 13,1
			11,8 - 12,0
(2)	0,52	0,70	12,3 - 12,4
		0	10,4 - 11,5
		0,21	12,0 - 12,1
			10,8 - 11,0

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

En Testing the hydraulic start-locking device

Locking at 0,45 - 0,55 bar  
Unlocking at 0,25 - 0,35 bar

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 5,7 v 12

2. Edition

En

PES 6 A 90 D 410 RS 2596 RSV 350-1200 AOB 1148 L

supersedes

company

engine

8.82

Daimler-Benz

OM 352 A

110 kW (150 PS)

Komb.-Nr. 0 400 876 310

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,0-2,1$  mm (from BDC) RW  $9,0-12,0$  mm  
( $1,95-2,15$ )

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre tensioning (torque control valve) mm
	2	3	4	2	3	6
1200	12,2+0,1	7,4-7,5	0,3(0,45)			
350	8,1-8,3	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
Loose	800	0,3-1,0	-	-	-	ca. 27			1200	12,2-12,3
	x = 5,0						100	min. 19,0	600	13,2-13,3
							350	8,1-8,3	950	12,6-12,9
							500	560=2,0		
ca. 62	11,2	1240-1250								
2a	4,0	1385-1415								
	1500	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to )							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 1200	0,7 bar 74,0-75,0 (72,0-77,0)	1240-1250*		LDA 600	0,7 bar 73,0-75,0 (71,0-77,0)	100	78,0-88,0 16,1- 16,5mmRW	-	-
				LDA 500	0 bar 52,0-53,0 (50,0-55,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure  
increasing

MB 5,7 v 12

-2-

Testoil-ISO 4113

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PES 6 A..RS 2596 with..A08 1148 L	0,45	0,70 0 0,24	13,2 - 13,3 11,5 - 11,6 12,8 - 12,9 12,2 - 12,1

Notes

(1) when n =

rev/min and  
gauge pressure =

bar ( : maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at 0,75 - 0,85 bar  
Unlocking at 0,25 - 0,35 bar

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 x 3

2. Edition

En

PES 6 A 90 D 410 RS 2596 RSV 350-1400 AOB 1148 L

Komb.-Nr. 0 400 876 313

supersedes

company

engine

8.82

Daimler-Benz

OM 352 A

115 kW (156 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC)  
2,00-2,10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	11,3+0,1	7,1-7,2	0,3(0,45)			
350	7,9+0,2	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.21	350	7,5	1380	11,3+0,1
	x =	5,0					100	min.19	800	12,3+0,1
							350	7,9-8,1	1200	11,6+0,1
							530	590= 2,0		
ca.64	1430 - 1440=	10,3								
2a	1510 - 1540=	4,0								
	1620 =	0,3- 1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1380	0,7 bar 71,0-72,0 (69,0-74,0)	1430-1440*	LDA 700	0,7 bar 67,0-69,0 (64,5-71,5)	100	78,0-88,0 15,6 - 16,0 mm RW			
			LDA 500	0 bar 58,0-59,0 (56,0-61,0)					

Checking values in brackets

\* 1 mm less control rod travel than col 2

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Testoil-ISO 4113

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =                      rev/min      decreasing pressure - in bar gauge pressure  
    increasing

MB 5,7 x 3      -2-

Testoil-ISO 4113

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure =                      bar	Gauge pressure =                      bar	mm                      (1)	
RS 2596 with AOB 1148 L	0,70			12,3 - 12,4
		0		11,8 - 11,9
		0,38		12,0 - 12,1

Notes

(1) when n =                      rev/min and                      bar ( = maximum full load control rod travel)  
    gauge pressure =

Testing the hydraulic start-locking device

Locking at                      0,40 - 0,50 bar

Unlocking at                      0,25 - 0,35 bar

①

# Test Specifications Fuel Injection Pumps ① and Governors

PP 001/4 MAN 15,0d

2. Edition

En

PE 10A 95D 520/5 LS 2604 RQV 250-1150 AB1104 R  
Komb.-Nr. 0 400 649 221

supersees 80

comp. MAN

eng. 2840 MF

268kw (364 PS)

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2  
0 - 45 - 72 - 117 - 144 - 189 - 216 - 261 - 288 - 333°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (1,65-1,85) mm (from BDC) Zyl. 10; RW=9,0 - 12,0 mm  
1,70-1,80

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	13,0+0,1	12,5 - 12,7	0,3(0,6)			
250	6,9-7,1	0,9 - 1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in 

## Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 12	100 250	min. 8,5 6,9-7,1	200 520 830 1150	0,5-0,7 4,6-4,9 5,8-6,1 7,8
ca. 6°	12,0 4,0 1355	1190-1200 1280-1310 0 - 1,0				3a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑧		Torque-control ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	124,5-126,5 (122,5-128,5)	1190-1200*	650 500	113,5-117,5 (111,5-119,5) max. 118,5 (max. 120,5)	100	15,9-16,5 mm RW	1150 500 1010 1080	13,0+0,1 13,5+0,1 13,4+0,2 13,0+0,3

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

B24

024

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# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 g 6

3. Edition

En

supersedes 6.83

company: KHD

engine: F 4 L 913

55 kW (75 PS)

Schlepper D 7807 -  
S 16

PES 4 A 85 D 410/3 RS 2610 RSV 325-1150 A 8 B 2102 L  
1 - 3 - 4 - 2 je  $90^{\circ} \pm 0,5^{\circ}$  ( $\pm 0,75^{\circ}$ ) A 8 C 2102 L  
Komb.-Nr. 0 400 864 051

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,45-2,65) 2,50-2,60 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	11,3+0,1	6,8 - 6,9	0,3(0,45)			
325	8,7-8,9	0,9 - 1,5	0,25(0,45)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 17	325	8,3	1150	1,3-11,4
	x = 3,5						325	8,7-8,9	900	1,6-11,9
							460-520 = 2,0		500	2,1-12,2
ca. 54 ⑤	1190-1200 = 10,3 1230-1260 = 4,0 1400 = 0,3-1,7									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						Control rod travel mm	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	mm
1	2	3	4	5	6	7	8		9
1150	68,0 - 69,0 (66,0 - 71,0)	1190-1200*	500	57,5 - 59,5 (55,5 - 61,5)	-	-	-	-	-
			800	64,5 - 66,5 (62,5 - 68,5)					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 1 g 8

2. Edition

En

PES 4 A 85 D 410/3 RS 2610

RSV 325-1150 A 8 B 2163 L

Komb.-Nr. 0 400 864 055

supersedes 10.82

company KHD

engine F 4 L 913

55 kW (75 PS)

/ 2300 min<sup>-1</sup>

tractor DX 80

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,5-2,6}{(2,45-2,65)}$  mm (from BDC).

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,3+0,1	6,8-6,9	0,3(0,45)			
325	9,1-9,3	1,5-1,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in  

Testoil-ISO 4113

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 19	325	8,7	1150	11,3+0,1
	x =	4,5					100	min. 19,0	500	12,1+0,1
ca. 55	10,3	1190-1200					325	9,1-9,3	900	11,6+0,2
2a	4,0	1245-1275					470 - 530	= 2,0		
	1400	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limit Note changed to ) rev/min		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1150	68,0-69,0 (66,0-71,0)	1190-1200*	500	58,0-61,0 (55,5-63,5)	-	-	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

9.83

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G2

c2



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SCL 9,8 a 1  
2. Edition

En

PE 8 A 95 D 410 RS 2615 RSV 325-1025 A1B 2177 L  
1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$   
Komb.-Nr. 0 400 678 042

supersedes 9.82  
company Schlüter  
engine SDMT 110/112 W 8  
136 kW (185 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,0-2,1$  mm (from BDC) bei RW = 9,0 - 12,0  
(1,95-2,25)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1025	12,7+0,1	10,2-10,4	0,3(0,6)			
325	8,4-8,6	1,4-2,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 27	325	8,0	1025	12,7+0,1
	x = 5,0						100	min. 19,5	500	13,1+0,1
ca. 57	11,7	1065-1075					325	8,4-8,6	795	12,8+0,2
2a	4,0	1165-1195					590 - 650	= 2,0		
	1330	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3		4	5	6	7	8	9
LDA 1025	0,7 bar 102,5-104,5 (100,5-106,5)	1065-1075*		LDA 700	0,7 bar 103,5-106,5 (101,5-108,5)	100	171,5-181,5 / 19,5- 21,0mm RW	-	-
				LDA 500	0 bar 73,5-76,5 (71,5-78,5)				

Checking values in brackets

\* 1 mm less control rod travel than col 2

6.83

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

SCL 9,8 a 1

-2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE8A..RS 2615 with..A1B2177L	0,32	0,70 0 0,18	12,9-13,0 13,1-13,2 12,0-12,1 12,3-12,5

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at 0,4 - 0,5 bar  
Unlocking at 0,15 - 0,25 bar

Testoil-ISO 4113

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 18,2 a

1. Edition

En

PE 10 A 95 D 520/5 LS 2623 RQV 250-1150 AB 1150 R  
Komb.-Nr. 0 400 649 225

supersedes

company MAN

engine D 2840 MF

268 kW (364 PS)

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4  
0 - 27 - 72 - 99 - 144 - 171 - 216 - 243 - 288 - 315<sup>0</sup> ± 0,5<sup>0</sup> (± 0,75<sup>0</sup>)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 - 1,8  
(1,65 - 1,85) mm (from BDC) Zyl. 10; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	13,0+0,1	12,5-12,7	0,3(0,6)			
250	7,9-8,1	0,9-1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 12	100	min. 8,5	200	0,6-0,8
ca. 63	12,0	1190-1200					250	7,9-8,1	520	4,6-4,9
	4,5	1290-1320					410-470	= 2,0	830	5,8-6,1
	1355	0 - 1,0							1150	7,8

Torque control travel a = 0,5 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed		Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	cm <sup>3</sup> /1000 strokes 4	rev/min 5	cm <sup>3</sup> /1000 strokes 6	rev/min 7	cm <sup>3</sup> /1000 strokes 8	rev/min 9	Control rod travel mm 10
1150	124,5-126,5 (122,5-128,5)	1190-1200*	650	113,5-117,5 (111,5-119,5)	100	15,9-16,5 mm RW		1150	13,0+0,1
			500	max. 118,5 (max. 120,5)				500	13,5+0,1
								1010	13,4+0,2
								1080	13,0+0,3

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

# ADJUSTMENT TEST - ALTITUDE-PRESSURE COMPENSATOR

MAN 18,2 a

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 10 A..LS 2623 + RQV..AB 1150 R	0,68	0,95-0,93 0,91 0,52	10,8 - 11,6 13,5 - 13,6 13,0 - 13,3 10,4 - 10,7

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 KHD 1 o

2. Edition

En

Testoil-ISO 4113

PES 6 A 95 D 410 RS 2625

RSV 325-1150 A8B 674 DL

Komb.-Nr. 0 400 876 305

supersedes 2.82

company: KHD

engine: B F 6 L 913 B  
Bagger

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 1,9 - 2,0 \\ (1,85 - 2,05) \end{matrix}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,4+0,1	8,3 - 8,4	0,3(0,6)			
325	7,2-7,4	1,6 - 2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 15	325	6,8	1150	11,4+0,1
	X =	3,0					100	min.	500	12,2+0,1
							325	7,2-7,4	1000	11,7+0,3
ca. 47	10,4	1190-1200					615-675	= 2,0		
⑤	4,0	1205-1235								
	1325	0,3 - 1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit.	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)								
rev/min 1	cm <sup>3</sup> /1000 strokes 2	Note: changed to ... rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 81,0 - 83,0 (79,0 - 85,0)	1190-1200*	LDA 800	0,7 bar 83,0-86,0 (80,5-88,5)	100	116,5-126,5 (113,5-129,5) = 15,9 - 16,4 mm RW		
			LDA 500	0 bar 56,5 - 59,5 (54,5 - 61,5)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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C7

C7

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

KHD 1 0 -2-

Testoil-ISO 4113

Pump/governor	Setting	Measurement	Control rod travel <sup>(1)</sup> diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm
PES 6 A..RS 2625 with.. A8B 674 DL	0,7	0 0,36 0,2	12,2 - 12,3 10,8 - 10,9 11,9 - 12,0 11,0 - 11,2

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 EIC 2,9 b 1

1. Edition

En

PES 3 A 90 D 320 RS 2626  
Komb.-Nr. 0 400 873 033

RSV 300-1000 A 1 B 2171-2 R

supersede Eicher  
company EDL 3-4  
engine 49 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,1-2,35), mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0,1	8,2-8,3	0,2(0,45)			
300	9,0-9,2	2,5-3,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 19	300	8,6	1000	12,4-12,5
	x = 5,75						100	min.19,5	500	13,4-13,5
							300	9,0-9,2	870	12,8-13,0
ca. 48	11,4	1040-1050				395-455				
2a	4,0	1085-1115								
	1275	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1000	82,0-83,0 (80,0-85,0)	1040-1050*	500	82,0-85,0 (80,0-87,0)	100	130,0-140,0 (127,0-143,0) =19,5- 21,0 mm RW	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 EIC 2,9 c 3

1. Edition

En

PES 3 A 90 D 320 RS 2626 RSV 300-1050 A 1 B 2171-3 R  
Komb.-Nr. 0 400 873 034

supersedes  
company: Eicher  
engine: EDL 3-8  
41 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 - 2,3  
(2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,4+0,1	7,1 - 7,2	0,25(0,5)			
300	8,3-8,5	2,0 - 3,0	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	300	7,9	1050	10,4-10,5
	x = 4,75						100	min. 19,5	500	11,1-11,2
							300	8,3-8,5	885	10,7-10,9
							410-470	= 2,0		
ca. 57	9,4	1090-1100								
2a	4,0	1130-1160								
	1295	0,3 - 1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1050	71,0-72,0 (69,0-74,0)	1090-1100*		600	66,5-68,5 (64,0-71,0)	100	88,0-98,0 (85,0-101,0) = 14,7 - 15,3 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 EIC 2,9 c 2  
1. Edition

En

PCS 3 A 90 D 320 RS 2626 RSV 300-1050 A 1 B 2171-4 R

Komb.-Nr. 0 400 873 035

supersedes  
company: Eicher  
engine EDL 3-9  
49 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,2 - 2,3 (2,15-2,35) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,7+0,1	8,9 - 9,0	0,25(0,5)			
300	8,3-8,5	2,2 - 3,2	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	300	7,9	1050	12,7-12,8
	x = 4,75						100	min.19,5	500	13,4-13,5
							300	8,3-8,5	775	13,0-13,2
ca. 58	11,7	1090-1100					410 - 470	=2,0		
2a	4,0	1145-1175								
	1310	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1050	88,5-89,5 (86,5-91,5)	1090-1100*	600	90,0-92,0 (87,5-94,5)	100	120,0-130,0 (117,0-133,0) = 19,5-21,0 mmRW	0 -	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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C11

C11

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 EIC 2,9 c 4

1. Edition

En

PES 3 A 90 D 320 RS 2626

RSV 300-975 A 1 B 2171-5 R

supersedes  
company Eicher  
EDL 3-2  
engine 40 kW

Komb.-Nr. 0 400 873 036

1 - 3 - 2 je 120°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,2-2,3}{(2,15-2,35)}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
975	11,3+0,1	7,7-7,8	0,25(0,5)			
300	7,9-8,1	1,5-2,5	0,2 (0,45)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 X = 5,25	-	-	-	ca. 23	300	7,5	-	-
ca. 53	10,4	1015-1025					100	min.19,5		
2a	4,0	1070-1100					300	7,9-8,1		
	1235	0,3-1,7					415-475	=2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
975	77,0-78,0 (75,0-80,0)	1015-1025*		600	68,0-70,0 (66,5-72,5)	100	128,0-138,0 (125,0-141,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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7.83

C12

C12

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 FOR 5,9 d  
3. Edition

En

PES 6 A 90 D 210 RS 2628 RSV 325-1200 AOB 2140 L  
Komb.-Nr. 0 400 866 104

supersedes 8.82  
company Ford  
engine Dover 363 T/C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,7-2,8 (2,65-2,85) mm (from BDC) At port closing the locating pin must engage in the slot of the pointer.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1175	11,5+0,1	8,4-8,5	0,3(0,45)			
350	5,1-5,3	0,5-1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.38	350	4,7	-	-
	x = 4,0						100	min.19,0		
ca.67	10,5	1240-1250					350	5,1-5,3		
2a	4,0	1375-1405					490 - 550	=2,0		
	1540	0,3-1,7					625	max. 1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3	rev/min	cm <sup>3</sup> /1000 strokes	5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2		4			6	7	8	9
LDA 1175	0,7 bar 83,5-84,5 (81,5-86,5)	1240-1250*	LDA 500	0 bar 49,0-51,0 (47,0-53,0)		100	76,0-90,0 / 19,0-21,0 mm R <sub>W</sub>	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

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# D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1175 rev/min decreasing pressure - in bar gauge pressure increasing

FOR 5,9 d -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 A..RS 262L with .A0B 2140 L	0,7	0 0,48 0,30	11,5-11,6 10,1-10,2 11,1-11,2 10,2-10,4

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 FOR 5,9 £

2. Edition

En

PES 6 A 90 D 210 RS 2629 RSV 350-1300 AOB 2142 L  
Komb.-Nr. C 400 866 102

supersedes 8.82

company: Ford

engine: Dover 363

**Testoil-30 4113**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(2,7-2,8)  
(2,65-2,85)

At port closing the locating pin must  
engage in the slot of the pointer.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	11,7+0,1	5,9 - 6,0	0,3(0,45)			
350	7,3-7,5	0,7 - 1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	ca. 39	350	6,9	1250	11,7+0,1
	X = 3,5						100	min. 19,5	700	11,9+0,1
							350	7,3-7,5		
							580-640	= 2,0		
ca. 71	10,7	1370-1380								
⑤	4,0	1515-1545								
	1680	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational- speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1250	58,5-59,5 (56,5-61,5)	1370-1380 *	1000	51,0 - 55,0 (49,0 - 57,0)		100	76,0-90,0 bei 19, - 21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

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# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 5,5 e

2. Edition

En

PES 6 A 80 D 410 RS 2633 RQV 300-1350 AB 1175 L

Komb.-Nr. 0 400 846 499

supersedes 6.83

company: Fiat

engine: 8060.24.661  
90,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>2,2 - 2,3</sup>  
(2,15-2,35) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1350	13,5+0,1	6,7 - 6,8	0,25(0,35)			
300	7,1-7,3	0,9 - 1,5	0,2 (0,3)			
800	-	C, Sp. 4u.5	0,35(0,45)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1440	15,2-17,8	-	-	-	ca. 13	100	min.9,0	250	0,2-0,5
ca. 60	12,5 4,0 1700	1390-1400 1540-1570 0 - 1,0				350-450	300 920	7,4-7,6 max.1,0	550 1000 1550	3,0-3,5 5,2-5,4 9,6

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1350	0,7 bar 66,5-67,5 (65,0-69,0)	1390-1400*	LDA 800	0,7 bar 59,0-61,0 (57,0-63,0)	200	70,0-80,0 (67,0-83,0) = 15,0-15,5 mm RW	-	-
			LDA 500	0 bar 39,5-41,5 (37,5-43,5)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# D. Adjustment Test for Manifold Pressure Compensator

FIA 5,5 e

- 2 -

Test at n = 1350 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2633 +RQV..AB 1175 L	0,70	0,27 0,23 0	13,5 - 13,6 13,2 - 13,3 12,4 - 12,6 12,0 - 12,1

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SIC 3,9 c

3. Edition

En

PES 4 A 90 D 320 RS 2634 RSV 300-1025 A 1 B 2153 R

supersede 6.83

company: Eicher

engine: EDL 4-2  
65 kW (88 PS)1 - 2 - 4 - 3 je  $90^\circ \pm 0,5^\circ (\pm 0,75^\circ)$ 

Komb.-Nr. 0 400 874 233

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 2,2 - 2,3 \\ (2,15 - 2,35) \end{matrix}$  mm (from BDC) RW=9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1025	12,6+0,1	8,1 - 8,2	0,2(0,45)			
300	10,9+0,2	4,4 - 4,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	ca. 16	300	10,5	1025	12,6+0,1
	x = 2,25								500	13,2+0,1
							300	10,9-11,1	880	12,9+0,2
⑤ 46	11,6	1065-1075					400-460	=2,0		
	4,0	1095-1125								
	12 60	0,3-1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1025	81,0-82,0 (79,0-84,0)	1065-1075*	750	83,5-86,5 (81,5-88,5)	100	101,0-111,0 (98,0-114,0)	-	-	
			500	77,0-79,0 (75,0-81,0)		= 17,7-18,3 mm RW			

Checking values in brackets

\* 1 mm less control rod travel than col. 2



# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 EIC 3,9 f

2. Edition

En

PES 4 A 80 D 320 RS 2651 RSV 300-1075 A1B 2175 R

Komb.-Nr. 0 400 874 235

1 - 2 - 4 - 3 je  $90^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes 1.82

company Eicher

engine EDL 4-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,15-2,25$  mm (from BDC)  
(2,1 - 2,3)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1075	10,5+0,1	6,2-6,3	0,2 (0,35)			
300	9,4-9,6	3,0-4,0	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
100%	800	0,3-1,0	-	-	-	ca. 29	300	9,0	1075	10,5+0,1
	X = 5,5						100	min 19,5	500	11,3+0,1
							300	9,4-9,6	850	10,9+0,2
							450-510	= 2,0		
ca. 61	9,5	1115-1125								
⑤	4,0	1165-1195								
	1330	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
rev/min	cm <sup>3</sup> /1000 strokes	3		4	5	6	7	8	9
1	2								
1075	62,0-63,0 (60,5-64,5)	1115-1125*		600	64,5-66,5 (63,0-68,0)	100	17,4-18,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

Testoil-ISO 4113

C19

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 EIC 3,9 g  
2.Edition

En

PES 6 A 80 D 320 RS 2652 RSV 300-1050 A 0 B 2001-1 R  
Komb.-Nr. 0 400 876 314

supersedes 3.83  
company Eicher  
engine EDL6-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25  
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,4+0,1	6,5-6,6	0,2(0,35)			
300	6,9-7,1	1,1-1,7	0,2(0,3)			
600	-	C, Sp. 4 u. 5	0,3			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 29	300	6,5	1050	10,4-10,5
	X = 6,0						100	min. 19,0	500	11,4-11,5
							300	6,9-7,1	830	10,9-11,1
ca. 51	9,4	1090-1100					445-505	= 2,0		
2a	4,0	1160-1190					650	max. 1,0		
	1325	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to ... rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1050	64,5-65,5 (63,0-67,0)	1090-1100		600	68,5-70,5 (67,0-72,0)	100	100,0-110,0 = 16,2-16,8 mm RW	-	-

Checking values in brackets.

\* 1 mm less control rod travel than col 2

9.83

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Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 EIC 3,9 g 1

1. Edition

En

PES 6 A 80 D 320 RS 2652 RSV 300-1150 A 0 B 2001-2 R  
Komb.-Nr. 0 400 876 317

superseded  
company Eicher  
engine EDL 6-2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,15-2,25}{(2,1-2,3)}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	7,8 - 7,9	0,25(0,4)			
300	8,3-8,5	2,0 - 3,0	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever mm			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees rev/min			3 Torque control Control rod travel rev/min	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 17	300	7,9	-	-
	x = 2,75						100	min. 19,5		
							300	8,3 - 8,5		
ca. 42	11,0	1190-1200					570-630	= 2,0		
2a	4,0	1285-1315								
	1430	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational speed limit Note: changed to ... rev/min		3a Fuel delivery characteristics		5 Starting fuel delivery Idle		4a Idle stop Control rod travel	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
1150	77,5-78,5 (76,0-80,0)	1190-1200*		600	71,0-73,0 (69,0-75,0)	100	103,0-113,0 = 16,2- 16,8 mmRW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

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C21

C21

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 6,2 e 1  
1. Edition

En

PES 6 A 90 D 320/3 RS 2660 RSV 325-1200 A 0 B 2181 R

Komb.-Nr. 0 400 866 114

supersedes  
company MWM  
engine TD 226 B-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,95-3,05  
(2,8-3,1) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,0-9,1	7,5 - 7,6	0,3(0,45)			
325	7,4-7,6	2,6 - 3,4	0,25(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Control lever deflection in degrees		Lower rated speed		3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	7	8	rev/min	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	325	7,0		1200	9,0 - 9,1
	x = 5,0						325	7,4-7,6		500	9,9 - 10,0
							545-605	= 2,0		860	9,5 - 9,7
ca. 51	8,0	1240-1250									
2a	4,0	1300-1330									
	1465	0,3-1,7									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to .)							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1200	0,7 bar 74,5-75,5 (72,5-77,5)	1240-1250*	LDA 500	0 bar 59,5-60,5 (57,5-62,5)	100	113,0-123,0 = 19,5 - 21,0 mmRW	0 -	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

6.83

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C22

C22

# D. Adjustment Test for Manifold Pressure Compensator

MWM 6,2 e 1 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 A..RS 2660 + RSV...AOB 2181 R	0,70	0 0,14 0,13	9,9 -10,0 9,0 - 9,1 9,8 - 9,9 9,5 - 9,7

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 6,0 f

2. Edition

En

PES 6 MW 100/320 RS 1004 RSV 325-1050 MW 4/308  
0 403 476 012

superseded 4.82

company Volvo/Penta

engine TD 60 D

112 kW (152 PS)

1 - 5 - 3 - 6 - 2 - 4  
0 - 60-120-180-240-300 + 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 2,80-2,90 \\ (2,75-2,95) \end{matrix}$  mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1020	10,6+0,1	8,45-8,65	0,35(0,6)			
325	4,9-5,0	1,0 -1,4	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11 + 0,1
loose	800	0,3-1,0				ca. 26	325	4,3	350	11,2
	x = 4,0						325	4,9-5,0	500	10,8
ca. 63	1090-1100 = 9,6						450-510 = 2,0		1050	10,6
2a	1130-1160 = 4,0									
	1300 = 0,3-1,7									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to ) rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3		4	5	6	7	8	9
1020	84,5-86,5 (82,5-88,5)	1090-1100*				100	min. 140,0	325	4,9
						325	10,0-14,0 (7,5-16,5)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 b

2. Edition

En

PES 6 A 100 D 410 RS 3034 RSV 600-1100 A 2 B 2080 L

Komb.-Nr. 0 401 276 049

Use overflow valve 1 413 385 007

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes: 4.83  
company: John Deere  
engine: 6.466 AZ-01  
152 kW

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{1,95-2,05}{(1,90-2,10)}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,9±0,1	13,0-13,2	0,3			
600	4,8-5,0	1,3-1,7	0,3			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm 11	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	
loose,	800	0,3-1,0	-	-	-	ca. 19	600	4,4	-	-
ca. 37	11,2	1145-1155					100	min. 19,0		
2a	4,0	1195-1225					600	4,8-5,0		
	1250	0,3-1,7					620-680	= 2,0		
							800	max. 1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 4a Idle stop Control rod travel mm 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7		rev/min 8	
LDA 1100	0,7 bar 130,0-132,0 (128,5-133,5)	1145-1155*	LDA 500	0 bar 68,5-71,5 (67,0-73,0)		100	170,0-195,0 = 19,0- 21,0 mm RW	600	4,9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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8.83

D1

24

# D. Adjustment Test for Manifold Pressure Compensator

DEE 7,6 b

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A ..RS 3034 +RSV..A 2 B 2080L	0,29	0,13	2,65-2,75 0,7-1,1

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 VOL 6,0r2

1. Edition

En

PES 6 MW 100/320 RS 1104

RSV 650-750 MW 4/311-2

0 403 476 018

supersedes Volvo  
company TD 60 DG  
engine 86 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 2,80-2,90 \\ (2,75-2,95) \end{matrix}$  mm (from BDC) RW 9 - 12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,1+0,1	9,05-9,25	0,35(0,6)			
650	4,5-4,6	1,7 - 2,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 34	650	4,0	375	11,9-12,5
	x = 3,0						650	4,5-4,6	470	11,1-11,2
ca. 40	10,1 = 750-760						690-750	= 2,0		
2a	4,0 = 760-790									
	0,3-1,7 = 930									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	cm <sup>3</sup> /1000 strokes 5	6	rev/min 7	cm <sup>3</sup> /1000 strokes 8	rev/min 9	Control rod travel mm 10
700	90,5-92,5 (88,5-94,5)					650	17-21 (15,5-22,5)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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Testoil-ISO 4113

# Test Specifications

## Fuel Injection Pumps ②

### and Governors

WPP 001/4 MB 8,7 j

6. Edition

En

PE 6 MW 100/720 RS 1007

RQ 300/1250 MW 12-1 (MW 12)

Komb.-Nr. 0 403 546 001

1 - 5 - 3 - 6 - 2 - 4 = 0 - 60 - 120 - 180 - 240 - 300

+ 0,50 (0,75)<sup>0</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 1.82

company: Daimler Benz

engine: OM 360 A

155 kW (211 PS)

Testoil-ISO 4113

### A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{3,80-3,90}{(3,75-3,95)}$  mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,2+0,1	9,95-10,15	0,35(0,6)			
300	6,9-7,1	1,35-1,75	0,35(0,55)			
750	11,2+0,2	C, Sp. 4-5	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,1-13,9	650	13,5	10,2	1295-1310	300	7,0	220	min. 9,0		
1550	0,1-1,0	VH = 46 <sup>0</sup>		4,0	1395-1425			300 395- 435	6,9-7,1 = 2,0		

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control  
rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1250	99,5-101,5 (97,5-103,5)	500	750	93,0-97,0 (91,0-99,0)	100	125,0-135,0 (122,0-138,0)
					300	13,5-17,5 (11,0-20,0)

Checking values in brackets

8.83

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D4

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7 d

7. Edition

En

PE 8 MW 100/720 LS 1010  
RQV 300-1150 MW 23  
Komb. 0 403 548 002

supersedes 1.82

company: KHD

engine: BF 8 L 413 F  
212 kW (288 PS)  
/ 2100 min

bzw. 206 kW  
/ 2300 min<sup>-1</sup>  
(Maxidyne)

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3  
0 - 45- 90-135-180-225-270-315  $\pm 0,5$  (0,75)<sup>0</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 3,10-3,20 \\ (3,05-3,25) \end{matrix}$  mm (from BDC) RW 9.0 - 12.0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,	13,6-13,8	0,35(0,6)			
300	6,3-6,5	1,25-1,65	0,35(0,55)			
500	10,2+0,					

Adjust the fuel delivery from each outlet according to the values in  .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1180 1400	15,2-17,8 0 - 1,0				ca. 18,5	100 300 430-490 = 2,0	min. 7,8 6,3-6,5	300 500 1200	1,4 3,2-3,8 8,5-8,6
ca. 63	9,2 4,0	1160-1170 1235-1265				③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min ④ cm <sup>3</sup> /1000 strokes 5		Starting fuel delivery idle switching point ⑥ rev/min ⑥ cm <sup>3</sup> /1000 strokes 7		Torque-control travel ⑤ rev/min ⑧ Control rod travel mm 9	
1	2	3	4	5	6	7	8	9
LDA 700	0,8 bar 136,0-138,0 (134,0-140,0)	1160-1170*	LDA 500	0 bar 94,0-96,0 (92,0-98,0)	100	136,5-146,5 (133,5-149,5)	700 780 1050 1150	12,5+0,1 12,5+0,1 11,2+0,2 10,2+0,3
					100-230 (80-250)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.83

D5

D5

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

KHD 12,7 d -2-

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
LS 1010 + MW 23	0,8		12,5 - 12,6
		0,24	10,5 - 10,6
		0,38	11,8 - 11,9
		0	10,2 - 10,3

### Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 8.1 c 1

2. Edition

En

PES 6 MW 100/720 RS 1012

RQV 425-1100 MW 35

supersedes 1.82

company OM-Brescia

engine: 8365.25.522

112 kW (152 PS)

0 403 446 126

1 - 5 - 3 - 6 - 2 - 4

0 - 60-120-180-240-300  $\pm 0,50$  (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,90-3,00$   
( $2,85-3,05$ ) mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2 $\pm$ 0,1	8,15-8,35	0,35(0,6)			
425	5,8-6,0	1,05-1,45	0,35(0,55)			
700	11,1 $\pm$ 0,1		0,5 (0,7)			
500	10,6 $\pm$ 0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100 1300	15,2-17,8 0 - 1,0	-	-	-	ca. 14	425 100	5,8-6,0 min. 7,5	425 500 1150	1,8 2,3-3,0 9,0-9,2
ca. 48	9,2 4,0	1140-1150 1185-1215				③a	470-530=2,0			

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9 $\pm 0,1$
LDA	0,5 bar		LDA	0,5 bar	100	RW max. 19 min. 160 (min. 157)	700	11,1
1100	81,5-83,5 (79,5-85,5)	1140-1150*	700	84,5-88,5 (82,5-90,5)	425	10,5-14,5 (9,0-18,0)	1000	10,2
			LDA	0 bar				
			500	67,5-69,5 (65,5-71,5)	100-345 (80-365)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.83

Testoil-ISO 4113

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# D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

OMB 8,1 c 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
RS 1012 + RQV..MW 35	0,25	0,5 0	10.9 - 11,0 11,1 - 11,2 10,6 - 10,7

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 8,1d

3. Edition

En

PES 6 MW 100/720 RS 1012

RQV 425-1100 MW 36

0 403 446 127

superseded 83

company OM-Brescia

engine 8365.25.580

129 kW (175 PS)

1 - 5 - 3 - 6 - 2 - 4  
0 -60-120-180-240-300  $\pm 0,5$  (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke		2,90-3,00 (2,85-3,05)		mm (from BDC) 9,0-12,0 mm		
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1100	11,5+0,1	9,6 - 9,8	0,35(0,6)			
425	5,8-6,0	1,15 - 1,55	0,35(0,55)			
700	12,4+0,1		0,5 (0,7)			
500	11,2+0,1		0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1100	15,2-17,8	-	-	-	ca.14	425	5,8-6,0	425	1,8
	1300	0 - 1,0					100	min.7,5	500	2,3-3,0
ca.49	10,5	1140-1150					470-530=	2,0	1150	9,0-9,2
	4,0	1185-1215				③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational speed		Fuel delivery characteristics		Starting fuel delivery		Torque-control	
Control-rod stop	Test oil temp. 40°C (104°F)	limitation	intermediate speed	high idle speed		idle	switching point	travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel
1	2	3	4a	4	5	6	7	8	9
LDA	0,5 bar			LDA	0,5 bar			700	12,4+0,1
1100	96,0-98,0 (94,0-100,0)	1140-1150*		700	101,0-105,0 (99,0-107,0)	100	RW max.19 min.160,0	1000	11,5+0,1
				LDA	0 bar	425	11,5-15,5 (9,0-18,0)		
				500	75,0-77,0 (73,0-79,0)	100-345	(80-365)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.83

Testoil-ISO 4113

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# D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min <sup>decreasing</sup><sub>increasing</sub> pressure - in bar gauge pressure

OMB 8,1 d

-2-

Testoil-ISO 4113

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
RS 1012 with RQV-MW 36	0,27	0,2 0,5 0	12,1 - 12,2 11,5 - 11,7 12,4 - 12,5 11,2 - 11,3

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)



①

# Test Specifications Fuel Injection Pumps ① and Governors

VPP 001/4 OMB 8,1 c

2. Edition

En

PES 6 MW 100/720 RS 1012 RQV 425-1000 MW 36-1  
0 403 446 133

supersedes 4.82

company: OM Brescia

engine: 8365.25.530

121,4 kW (165 PS)

1 - 5 - 3 - 6 - 2 - 4  
0 - 60 - 120 - 180 - 240 - 300  $\pm 0,5$  (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 mm (from BDC) RW 9 - 12 mm  
(2,85-3,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,7+0,1	9,1-9,3	0,35(0,6)			
425	6,4-6,5	1,55-1,75	0,35(0,55)			
700	12,6+0,1		0,5(0,7)			
500	11,5+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in  .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100 1200	15,2-17,8 0 - 1,0	-	-	-	ca. 26	425 100 min. 8,0 490-550 = 2,0	6,4-6,5	425 500 1050	1,8 2,3-3,0 8,6-8,7
ca. 51	10,7 4,0	1040-1050 1120-1150				3a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9 +0,1
LDA 1000	0,6 bar 91,0-93,0 (89,0-95,0)	1040-1050 *	LDA 700	0,6 bar 102,0-104,0 (99,0-106,0)	100	RW 19-21 160,0-180,0 (157,0-183,0)	500 700 800	12,6 12,6 12,4
			LDA 500	0 bar 71,5-73,5 (69,5-75,5)	425	13,5-17,5 (11,0-20,0)	950 1000	11,7 11,7
					100-345 (80-365)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2  
8.83

Testoil-ISO 4113

D11

2/11

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# D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
 XXXXXX  
 XXXXXX

OMB 8,1 c -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1012 + RQV-MW 36-1	0,36	0,6 0 0,31	12,2-12,3 12,6-12,7 11,5-11,6 11,8-11,9

## Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PER 8,8c

2. Edition

En

PES 8 MW 100/320 RS 1022 RQV 250 - 1300 MW 37  
0 403 448 110

1 - 8 - 7 - 5 - 4 - 3 - 6 - 2  
0 -45 -90 -135-180-225-270-315

supersedes -

company: Perkins

engine: TV 8.540

242 kW (329 PS)

Port-closing mark on rear side

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 mm (from BDC) RW 9,0-12,0 mm  
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,6+0,1	11,3-11,5	0,35(0,6)			
250	5,9-6,0	1,55-1,95	0,35(0,55)			
800	11,6+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1300 1500	15,2-17,8 0-1,0	-	-	-	ca. 11	250 100	5,9-6,0 min. 7,5		
ca. 64	10,6 4,0	1340-1350 1395-1425				270-490				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	113,0-115,0 (111,0-117,0)	1340-1350*	800	111,5-115,5 (109,5-117,5)	100	min. 140,0		
					250	15,5-19,5 (13,0-22,0)		
					100-180 (80-200)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2  
9.83

Testoil-ISO 4113

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Port closing and TDC markerings

Comb.- No.  
... 110

°camshaft between port closing  
and TDC

at control-rod travel 10,5 mm  
17°

①

# Test Specifications

## Fuel Injection Pumps ①

### and Governors

WPP 001/4 MB 8,7 o

1. Edition

En

PES 6 MW 100/720 RS 1101  
RQV 300-1300 MW 44-1  
0 403 446 143

supersedes

company: Daimler Benz

engine: OM 362 LA  
141 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

### A. Fuel Injection Pump Settings

Port closing at prestroke <sup>3,2 - 3,3</sup>  
(3,15 - 3,35)

mm (from BDC) 9 - 12 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,9+0,1	9,45-9,65	0,35(0,6)			
300	6,0-6,1	1,05-1,45	0,35(0,55)			
800	11,9+0,1		0,5 (0,7)			
500	10,2+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in .

### B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1330 1600	15,2-17,8 0,1-1,0				ca. 11	100 300 520-580 = 2,0	min. 7,6 6,0-6,1		
ca. 64	10,9 4,0	1340-1350 1435-1465				③a				

Torque control travel a = mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 94,5-9,65 (92,5-98,5)	1340-1350*	LDA 800	0,7 bar 89,5-93,5 (87,5-95,5)	100	80,0-90,0 (77,0-93,0)		
			LDA 500	0 bar 54,5-56,5 (52,5-58,5)	300	10,5-14,5 (8,0-17,0)		
					100-230(80-250)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

D15

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D15

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

MB 8,7 o

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1101 + MW 44-1	0,7 bar	0 0,1 0,15	11,9 - 12,0 10,2 - 10,3 10,4 - 10,5 10,9 - 11,1

### Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 4,5 b

2. Edition

En

PES 4 MW 100/320 RS 1102 RQV 300-1100 MW 39

0 403 444 101

superseded by .82

company Volvo-BM

engine TD 45

65 kW (116 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90  
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,6+0,1	10,0-10,2	0,35(0,6)			
300	5,6-5,7	0,95-1,35	0,35(0,55)			
1000	11,6+0,1		0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100 1350	15,2-17,8 0 - 1,0				ca. 11	300 100	5,6-5,7 min. 7,2		
ca. 46	10,6 4,0	1140-1150 1190-1220				③a	380-440	= 2,0		

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed (2b) limitation intermediate speed (4a) rev/min	Fuel delivery characteristics (5a) high idle speed (5b) rev/min		Starting fuel delivery (6) Idle switching point rev/min		Torque-control (5) travel rev/min	
cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes	cm³/1000 strokes	cm³/1000 strokes	Control rod travel mm		
1	2	3	4	5	6	7	8	9
700	100-102 (98,0-104,0)	1140-1150*	1000	101,0-105,0 (99,0-107,0)	100 300 100-220 (0-250)	min. 140,0 9,5-13,5 (7,0-16,0)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.83

D17

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# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 a 1

2. Edition

En

PES 6 MW 100/320 RS 1103

RQV 350-1300 MW 43

0 403 446 131

Nozzle-and-holder assembly  
1 688 901 616 (207 + 3 bar)

supersedes 12.82

company: IHC

engine: DT 466 B

154,5 kW (210 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{4,00-4,10}{(3,95-4,15)}$  mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,9+0,1	10,3-10,5	0,35(0,6)			
350	6,0-6,2	1,6-2,0	0,35(0,55)			
1300	11,9+0,1		0,65(0,7)			
500	9,6+0,1					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	8,0 0-1	1440 1600	-	-	-	ca. 14	100 350	min. 9,0 6,0-6,2	350 450 1350	1,6 2,5-2,8 7,5
ca. 62,5	4,0	1475-1485				370-650 ③a				

Torque control travel a - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 103,0-105,0 (101,0-107,0)		LDA 1300	0,9 bar 107,0-111,0 (105,0-113,0)	100	19-21 mm RW 140-180		
			LDA 500	0 bar 63,5-65,5 (61,5-67,5)	350	16,0-20,0 (13,5-22,5) 220-280(210-290)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

Testoil-ISO 4113



## D. Adjustment Test for Manifold Pressure Compensator

Test at  $n = 500$  rev/min decreasing pressure - in bar gauge pressure  
increasing

IHC 7,6 a 1 -2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1103 + RSV .. MW 43	0,51		11,3 - 11,4
		0,9	11,9 - 12,0
		0	9,6 - 9,7
		0,28	10,4 - 10,5

Notes

(1) when  $n =$

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

Please note:

- Carry pump adjustment only with overflow valve 1 417 413 040 and use with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than  $n = 500 \text{ min}^{-1}$ .
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 c  
3. Edition

En

PES 6 MW 100/320 RS 1103  
RQV 350-1300 MW 43-1  
0 403 446 132

superseded 9.83  
company IHC-USA  
engine DT 466 B  
143,4 kW (195 PS)

Nozzle-and-holder assembly  
1 688 901 016 (207 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 mm (from BDC) RW = 9,0 - 12,0 mm  
(3,95-4,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
900	10,9+0,1	9,55-9,75	0,35(0,6)			
350	5,7-5,8	1,6 - 2,0	0,35(0,55)			
1300	10,9+0,1					
500	9,4-9,5		0,65(0,7)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	8,0	1355	-	-	-	ca. 13	100	min. 9,0		
	0-1	1550					350	5,8-6,0		
ca. 61,5	4,0	1470-1480				360-700				
						③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 900	0,9 bar 95,5-97,5 (93,5-99,5)		LDA 1300	0,9 bar 96,5-100,5 (94,5-102,5)	100	19-21 mm RW 140-180		
			LDA 500	0 bar 63,5-65,5 (61,5-67,5)	350	16,0-20,0 (13,5-22,5)		
					220-280 (210-290)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

Test ISO 413

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

IHC 7,6 c

-2-

Pump/governor	Setting	Measurement	Control rod travel <sup>diminution</sup> difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1103 + RQV..MW 43-1	0,4	0,9 0 0,2	10,5 - 10,6 10,9 - 11,0 9,4 - 9,5 9,8 - 9,9

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than  $n = 500 \text{ min}^{-1}$ .
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PER 10,0 r

1. Edition

En

PES 8 MW 100/720 RS 1106  
RQV 275-1125 MW 40  
0 403 448 118

supersedes-

company: Perkins  
engine: V8.640 GR  
147 kW

Port-closing mark on rear side

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{pmatrix} 3,00-3,10 \\ 2,95-3,15 \end{pmatrix}$  mm (from BDC) RW = 9 - 12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,7+0,1	9,05-9,25	0,35(0,6)			
275	6,2-6,4	1,35-1,75	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1190 1350	15,2-17,8 0 - 1,0				ca. 11	100 275	min. 7,7 6,2-6,4		
ca. 62	9,7 4,0	1175-1185 1220-1250				300-500				

Torque control travel a =  mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
800	90,5-92,5 (88,5-94,5)	1175-1185*			100	min. 140		

Checking values in brackets

\* 1 mm less control rod travel than col. 2  
3.83

Testoil-ISO 4113

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## Port closing and TDC markerings

Comb.- No.  
... 110

°camshaft between port closing  
and TDC

at control-rod travel 9,0 -12,0 mm  
15°

# Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 KHD 30,4 c

1. Edition

En

PE12 P120 A920/5 RS 294

RSU 300/1000 POA 331 R

1-10-5-7-2-11-6-8-3-12-4-9 je 30° ±0,5° (±0,75°)

supersedes -

company KHD

BA 12 M 816

engine Kombi.-Nr. 0 401 870 058

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) mm (from BDC) =RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	31,0-31,4	0,5(0,9)			
300	6,3-6,5	2,2-2,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-		300	6,4	1000	14,9-15,0
	X=						300	6,3-6,5	360	16,2-16,8
	13,9	1040-1050					360-400	= 2,0	550	14,9-15,0
②a	4,0	1130-1160								
	1250	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3		4	5	6	7	8	9
Not known.		1040-1050*	-	-	-	100	19,5-21,0	-	-
Carry out adjustment on engine.							mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

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# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 b 1

2. Edition

En

PES 6 MW 100/320 RS 1107  
RQV 350-1200 MW 43

0 403 446 135

Nozzle-and-holder assembly  
1 688 901 016 (207 + 3 bar)

supersedes 12.82

company: IHC - USA

engine: DTC 466 B

121,3 kW (165 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $4,00-4,10$  mm (from BDC) RW =  $9,0-12,0$  mm  
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,1+0,1	8,4 - 8,6	0,35(0,6)			
350	5,9-6,1	1,6 - 2,0	0,35(0,55)			
1200	11,1+0,1		0,65(0,7)			
500	9,8+0,1					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	8,0 0-1	1355 1450	-	-	-	ca. 14	100 350	min.9,0 5,9-6,1	350 450 1350	1,6 2,5-2,8 7,5
ca. 60,5	4,0	1365-1375				370-650 ③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 800	0,9 bar 84,0-86,0 (82,0-88,0)		LDA 1200	0,9 bar 86,5-90,5 (84,5-92,5)	100	19-21 mm RW 140-180		
			LDA 500	0 bar 61,5-63,5 (59,5-65,5)	350 220-280(210-290)	16,0-20,0 (13,5-22,5)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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# D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

IHC 7,6 b 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1107 + RQV .. MW 43	0,3	0,9 0 0,13	10,8 - 10,9 11,1 - 11,2 9,8 - 9,9 10,1 - 10,2

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

Please note .

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than  $n = 500 \text{ min}^{-1}$ .
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.



# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6d

En

2. Edition

PES 6 MW 100/320 RS 1107  
RQV 350-1200 MW 43-2  
0 403 446 136

supersedes 12.82  
company: IHC-USA  
engine: DT 466 B  
132,4 kW (180 PS)

Nozzle-and-holder assembly  
1 688 901 016 (207 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 mm (from BDC) RW 9,0-12,0 mm  
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,8+0,1	9,45-9,65	0,35(0,6)			
350	5,9-6,1	1,6-2,0	0,35(0,55)			
1200	11,8-11,9		0,65(0,7)			
500	10,4-10,5					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	8,0 0,1	1355-1500	-	-	-	ca. 15	100	min. 9,0 350 5,9-6,1		
ca. 61,5	4,0	1375-1385				370-650				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 800	0,9 bar 94,5-96,5 (92,5-98,5)		LDA 1200	0,9 bar 96,0-100,0 (94,0-102,0)	100	19-21 mm RW 140,0-180,0		
			LDA 500	0 bar 70,0-72,0 (68,0-74,0)	350	16,0-20,0 (13,5-22,5) 220-280 (210-290)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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## D. Adjustment Test for Manifold Pressure Compensator

Test at  $n =$  500 rev/min decreasing pressure - in bar gauge pressure  
increasing

IHC 7,6 d -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
RS 1107 + RQV..MW 43-2	0,39	0 0,9 0,17	11,5 - 11,6 10,4 - 10,5 11,8 - 11,9 10,7 - 10,8

### Notes

(1) when  $n =$  rev/min and gauge pressure = bar (= maximum full-load control rod travel)

### Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than  $n = 500 \text{ min}^{-1}$ .
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 e

2. Edition

En

PES 6 MW 100/320 RS 1108

RQV 350-1200 MW 43-3

0 403 446 137

supersede 2.82

company IHC-USA

engine DT 466 B

132,4 kW (180 PS)

Nozzle-and-holder assembly  
1 688 901 016 (207 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 mm (from BDC) RW = 9,0 - 12,0 mm  
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	11,5+0,1	9,05-9,25	0,35(0,6)			
350	6,2-6,3	1,6 -2,0	0,35(0,55)			
1200	11,5+0,1		0,65(0,7)			
500	10,0+0,1					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	8,0 0,1	1360 1450	-	-	-	ca. 17 370-650	100 350	min.9,0 6,2-6,3		
ca.60,5	4,0	1380-1390				③a				

Torque control travel a ~ mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min cm <sup>3</sup> /1000 strokes 1 2		Rotational speed limitation intermediate speed rev/min 4a	Fuel delivery characteristics high idle speed rev/min cm <sup>3</sup> /1000 strokes 4 5	Starting fuel delivery idle switching point rev/min cm <sup>3</sup> /1000 strokes 6 7	Torque-control travel rev/min mm 8 9
LDA 800	0,9 bar 90,5-92,5 (88,5-94,5)		LDA 1200 0,9 bar 93,0-97,0 (91,0-99,0)  LDA 500 0 bar 60,0-62,0 (58,0-64,0)	100 19,0-21,0 RW 140-180 (137-183)  350 16,0-20,0 (13,5-22,5)  220-280(210-290)	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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Test oil ISO 4113

E5

ES

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure  
increasing

IHC 7,6 e

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1108 + RQV.. MW 43-3	0,42	0,9 0 0,19	11,1 - 11,2 11,5 - 11,6 10,0 - 10,1 10,3 - 10,4

Notes

(1) when n =

rev/min and  
gauge pressure =

bar ( = maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than  $n = 500 \text{ min}^{-1}$ .
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 f

3. Edition

En

PES 6 MW 100/320 RS 1108

RQV 350-1300 MW 43-4

0 403 446 138

Nozzle-and-holder assembly  
1 688 901 016 (207 + 3 bar)

supersedes 12.82

company: IHC

engine: DT 466 B

154,5 kW (210 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{3,00-3,10}{(2,95-3,15)}$  mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
900	12,6+0,1	10,7-10,9	0,35(0,6)			
350	6,5-6,6	1,6-2,0	0,35(0,55)			
1300	12,6+0,1		0,65(0,7)			
500	9,6+0,1					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	8,0 0-1	1440 1580	-	-	-	ca. 16	100 350	min. 9,0 6,1-6,2		
ca. 61,5	4,0	1500-1510				370-650				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 900	0,9 bar 107,0-109,0 (105,0-111,0)		LDA 1300	0,9 bar 112,5-116,5 (110,5-118,5)	100	19-21 mm RW 140,0-180,0		
			LDA 500	0 bar 53,5-55,5 (51,5-57,5)	350	16,0-20,0 (13,5-22,5)		
					220-280 (210-290)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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## D. Adjustment Test for Manifold Pressure Compensator

Test at  $n = 500$  rev/min decreasing pressure - in bar gauge pressure  
increasing

IHC 7,6 f -2-

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1108 + RQV .. MW 43-4	0,57		11,9 - 12,0
		0,9	12,6 - 12,7
		0	9,6 - 9,7
		0,27	10,4 - 10,5

Notes

(1) when  $n =$

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than  $n = 500 \text{ min}^{-1}$ .
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 g

3. Edition

En

PES 6 MW 100/320 RS 1108

RQV 350-1200 MW 43-5

0 403 446 139

Nozzle-and-holder assembly  
1 688 901 016 (207 + 3 bar)

supersedes 3.63

company IHC

engine DT 466 B

121,4 kW (165 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 mm (from BDC) RW = 9,0-12,0 mm  
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,5+0,1	8,3-8,5	0,35(0,6)			
350	5,8-5,9	1,6-2,0	0,35(0,55)			
1200	10,5+0,1		0,65(0,7)			
500	9,2-9,3					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	8,0 0-1	1360 1460	-	-	-	ca. 14	100 350	min. 9,0 5,8-5,9		
ca. 58,5	4,0	1360-1370				360-640				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 800	0,9 bar 83,0-85,0 (81,0-87,0)		LDA 1200	0,9 bar 88,5-92,5 (86,5-94,5)	100	19-21 mm RW 140-180		
			LDA 500	0 bar 59,0-61,0 (57,0-63,0)	350	16,0-20,0 (13,5-22,5) 220-280 (210-290)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2.

9.83

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## D. Adjustment Test for Manifold Pressure Compensator

Test at  $n = 500$  rev/min decreasing pressure - in bar gauge pressure  
increasing

IHC 7,6 g

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1108 + RQV .. MW 43-5	0,9		10,5 - 10,6
		0	9,2 - 9,3
		0,2	9,7 - 9,8
		0,34	10,2 - 10,3

### Notes

(1) when  $n =$  rev/min and gauge pressure = bar ( = maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than  $n = 500 \text{ min}^{-1}$ .
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.



# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 L

2. Edition

En

PES 6 MW 100/320 RS 1108  
RQV 350-1300 MW 45

0 403 446 140

Nozzle-and-holder assembly  
1 688 901 016 (207 + 3 bar)

supersedes 83

company IHC

engine DT 466 B  
143,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{3,00-3,10}{(2,95-3,15)}$  mm (from BDCRW = 9 - 12 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,7+0,1	9,55-9,75	0,35(0,6)			
350	5,9-6,0	1,6-2,0	0,35(0,55)			
1300	11,7+0,1		0,65(0,7)			
500	9,0-9,1					

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	8,0 0,1	1440-1505 1550	-	-	-	ca.14	100 350	min. 9,0 5,9-6,0		
ca.61,5	10,8 4,0	1360-1380 1475-1485				380-700				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 95,5-97,5 (93,5-99,5)	1360-1380*	LDA 1300	0,9 bar 99,5-103,5 (97,5-105,5) 0 bar 52,5-54,5 (50,5-56,5)	100 350 220-280(210-290)	RW 19-21 140-180 (137-183) 16,0-20,0 (13,5-22,5)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.83

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E41

E11

Testoil-ISO 4113

## D. Adjustment Test for Manifold Pressure Compensator

Test at  $n = 500$  rev/min decreasing pressure - in bar gauge pressure  
increasing

IHC 7,6 1

-2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
RS 1108 + MW 45	0,9	0 0,2 0,57	11,7 - 11,8 9,0 - 9,1 9,5 - 9,6 11,2 - 11,3

Notes

(1) when  $n =$

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than  $n = 500 \text{ min}^{-1}$ .
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 n

1. Edition

En

PES 6 MW 100/320 RS 1112  
RQV 350-1300 MW 46  
0 403 446 141

Nozzle-and-holder assembly  
1 688 901 016 (207 + 3 bar)

supersedes  
company IHC  
engine DTI-466 C  
154,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 mm (from BDC) RW = 9,0-12,0  
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	0,5+0,1	10,3-10,5	0,35(0,6)			
350	5,2-5,3	1,6-2,0	0,35(0,55)			
1300	10,5+0,1		0,65(0,6)			
500	8,4+0,1					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	8,0 0-1	1440-1505 1600				ca. 14	100 350	min. 9,0 5,2-5,3		
ca. 48,5	4,0	1490-1500				370-650 ③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 900	0,9 bar 103,0-105,0 (101,0-107,0)		LDA 1300	0,9 bar 107,0-111,0 (105,0-113,0)	100	RW 19-21 140-180 (137-183)		
			LDA 500	0 bar 63,5-65,5 (61,5-67,5)	350	16,0-20,0 (13,5-22,5)		
					220-280(210-290)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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E13

E13

## D. Adjustment Test for Manifold Pressure Compensator

Test at  $n =$

500

rev/min decreasing pressure - in bar gauge pressure  
increasing

IHC 7,6 n -2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1112 + MW 46	0,9 bar	0 0,28 0,51	10,5-10,6 8,4-8,5 9,0-9,1 10,0-10,1

Notes

(1) when  $n =$

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1,2 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than  $n = 500 \text{ min}^{-1}$ .
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 10,0 d 1  
2. Edition

En

PE 6 P 110 A 320 RS 138  
Komb.-Nr. 0 401 876 104

RSV 200-900 P 1/305 R

supersedes 3.83  
company Volvo-Penta  
engine MD 100 B  
114 kW (155 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,6 - 2,7$   
(2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9,3-9,4	10,9-11,1	0,4 (0,8)			
225	5,4-5,5	1,0-1,4	0,3 (0,6)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 29	225	5,0	-	-
	x = 6,0						225	5,4-5,5		
ca. 55	8,3	940-950					310-370	= 2,0		
2a	4,0	980-1010								
	1150	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit	3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)								
rev/min 1	cm <sup>3</sup> /1000 strokes 2	Note: changed to ... rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	109,0-111,0 (106,0-114,0)	940-950*	-	-	100	310,0-330,0 = RW 20,0 21,0 mm	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

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E15

E15

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 VOL 12,0 a

5. Edition

Testoil-ISO 4113

PE 6 P 110 A 320 RS 141 RQV 200-1100 PA 103/2R  
RS141,Z,Y 250-1100 PA 234/2R

supersedes 4.81  
company Volvo  
engine TD 120

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	17,9 - 18,7	0,6			2,5 <sup>+</sup> 0,1 ** (max. 2,2-2,9)
600	6 12 15	3,2 - 4,2 17,3 - 18,8 23,5 - 25,3				
200	6	1,1 - 2,1				

Adjust the fuel delivery from each outlet according to the values in

\*\* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

## B. Governor Settings

RQV .. 103/2R mit 141

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1150	15,5-18,3				ca. 23	100	7,0-10,0	200	1,5-2,3
	1410	0					200	5,0-8,4	500	3,6-4,0
ca. 66	1100	15,0-18,0					300	2,4-5,2	1150	8,3
	1200	7,2-12,6					400	0 - 2,2		
	1260	2,0-9,0					460	0	-	-
	1400	0								

Torque control travel a = mm  
abnorm. sldg-sleeve pos'n = 36,0 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm
LDA 700	0,7 bar 181,0-183,0	1150	LDA 700	0 bar 124,0-127,0	100	390 - 410		
					200	17 - 21 **		
					Streug.max. 2,5)			
(increase by ± 1,0 cm <sup>3</sup> )								./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

7.83

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**B. Governor Settings**

①

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1170	15,0-18,3				ca. 13	100	9,0-11,0	350	1,4-2,0
	1400	0					200	7,2-9,9	650	3,7-4,0
ca. 45	1100	15,0-17,8					300	4,0-6,9	1170	8,3
	1200	6,4-12,0					400	0 -2,8		
	1280	0 -6,2					490	0	-	-
	1360	0				③a				

Torque control travel a = — mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,7 bar 181,0-183,0	1160-1170 *	LDA 700	0 bar 124,0-127,0	100	390 - 410		
					250	11 - 15 Streug.max.2,5)	**	

\* 1 mm less control rod travel than col 2

Checking values in brackets

**B. Governor Settings**

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1170	15,0-18,3				ca. 13	100	9,0-11,0	350	1,4-2,0
	1400	0					200	7,2-9,9	650	3,7-4,0
ca. 45	1100	15,0-17,8					300	4,0-6,9	1170	8,3
	1200	6,4-12,0					400	0 -2,8		
	1280	0 -6,2					490	0	-	-
	1360	0				③a				

Torque control travel a = — mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 205,0-207,0	1160-1170*	LDA 700	0 bar 124,0-127,0	100	390 - 410		
					250	11 - 15 Streug.max.2,5)	**	

\* 1 mm less control rod travel than col 2

Checking values in brackets

**B. Governor Settings**

RQV .. 234/2R mit 141Y

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1170	15,0-18,3				ca. 13	100	9,0-11,0	350	1,4-2,0
	1400	0					200	7,2-9,9	650	3,7-4,0
ca. 45	1100	15,0-17,8					300	4,0-6,9	1170	8,3
	1200	6,4-12,0					400	0 -2,8		
	1280	0 -6,2					490	0	-	-
	1360	0				(3a)				

Torque control travel a = mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar		LDA	0 bar				
700	161,0-163,0	1160-1170	700	116,0-119,0	100	390 - 410		
					250	11 - 15		
					Streug. max. 2,5) --			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**D. Adjustment Test for Manifold Pressure Compensator**Test at n = rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel difference
	Gauge pressure = bar	Gauge pressure = bar	mm
141 mit 103/2R	0,48-0,50	0,12-0,22	- - -
141 mit 234/2R	0,60-0,62	0,14-0,30	- - -
141Z mit 234/2R	0,62-0,66	0,14-0,27	- - -
141Y mit 234/2R	0,49-0,52	0,14-0,30	- - -

En



②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP. 001/4 FIA 13,8 a  
9. Edition

En

PE 6 P 120 A 720 RS 167 RQ 225/1100 PA 118 R  
Komb.-Nr. 0 401 846 225

supersedes 3.83  
company: Fiat  
engine: 221 A

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 2,0-2,1 \\ (1,95-2,15) \end{matrix}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,1+0,1	17,0-17,3	0,5(0,9)			
225	7,5-7,7	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in  

Testoil-ISO 4113

## B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,1 4,0 1350	1145-1160 1190-1220 0-1,0	225	7,6	100 225 365-405 = 2,0	min. 9,1 7,5-7,7	1100 600	11,1-11,2 11,1-11,3

Torque-control travel  
on flyweight assembly dimension a =

0

mm

Speed regulation: At

1145-1160 min<sup>-1</sup>1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a		Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	Control rod travel mm 7
1100	170,0-173,0 (167,0-176,0)	-	-	-	-	100	19,0-21,0

Checking values in brackets

7.83

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# Test Specifications Fuel Injection Pumps ② and Governors

PE 6 P 120 A 720 RS 167 Z RQ 225/1100 PA 118 R  
Komb.-Nr. 0 401 846 345

supersedes 3.83  
company: Fiat  
engine: 221 A  
210 kW (286 PS)

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>2,0-2,1</sup>  
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,3+0,1	16,3-16,6	0,5(0,9)			
225	7,5-7,7	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	9,3 4,0 1300	1145-1160 1185-1215 0-1,0	225	7,6	100 225 365-405 = 2,0	min. 9,1 7,5-7,7	1100 550	10,3-10,4 10,3-10,5

Torque-control travel  
on flyweight assembly dimension a =

0

mm

Speed regulation: At 1145-1160 min<sup>-1</sup>

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7
1100	163,0-166,0 (160,0-169,0)	-	-	-	100	19,0-21,0

Checking values in brackets

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 9,4a

1. Edition

En

PES 8 P 100 A 921/5 RS 286 RQV 325-1250 PA 445 KR

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5

Values only apply to test nozzle and holder  
assembly 1 688 901 017 and fuel-injection test  
tubing 9 681 230 713.

Suction-gallery pressure 2,8 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

superseded

company: IHC

DVT 573 B

engine: Komb.-Nr.0 402 058 045

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>2,7-2,8</sup>  
(2,65-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,6-9,7	10,9-11,1	0,4			
325	5,0-5,1	1,7-2,3				

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 63	8,6 4,0 1640	1290-1300 1505-1535 0-1,0	-	-	-	ca. 10	100 325 350-410=2,0	7,1-8,0 4,9-5,1 2,0	-	-

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1250	0,8 bar 109,0-111,0 (107,0-113,0)	1290-1300*	LDA 900	0,8 bar 115,0-121,0 (113,0-123,0)	100	min. 170,0	1250	9,6+0,1
			LDA 800	0 bar 73,0-81,0 (71,0-83,0)	325	17,0-23,0	900	10,1+0,1
							700	9,8+0,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.83

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# D. Adjustment Test for Manifold Pressure Compensator

IHC 9,4a

-2-

Test at n = 800 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 8 P..RS 286 +RQV..PA 445 KR	0,11-0,16	0,82-0,87	Start End

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 11  
3. Edition

En

**Testoil-ISO 4113**

PES 6 P 110 A 720 LS295 RQ 250/1100 PA335DR (1)  
 ..PA351DR (2)  
 ..LS345 RQ 250/1100 PA335DR (3)  
 Komb.-Nr. 0 402 046 152 (1)  
 0 402 046 150 (2)  
 0 402 046 752 (3)

supersedes 10.77  
 company: M A N  
 engine: D 2566MT/MTUH

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 mm (from BOD) 9,0 - 12,0 mm  
 (2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,6 - 14,8	0,4(0,8)			
250	6,8-7,0	0,9 - 1,5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

335DR und 351DR

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12
500	19,2-20,8	600	20,0	11,2	1145-1160	250	6,9	100	min. 8,5	1100	12,1-12,2	
VH = max. 46°				4,0	1200-1230			250	6,8-7,0	1000	12,3-12,5	
				1300	0 - 1,0			370-410	=2,0	800	12,6-12,8	
										700	12,8-12,9	

Torque-control travel  
on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1145 - 1160 min<sup>-1</sup> 1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Change-over point rev/min 7		Control rod travel mm 12
LDA 1100	0,7 bar 145,0 - 148,0 (142,5 - 150,5)			LDA 500	0,2 bar 123,0 - 127,0 (120,0 - 130,0)	100				
700	157,0 - 161,0 (154,0 - 164,0)			LDA 500	0 bar 110,0 - 113,0 (107,0 - 116,0)					
						100-	170 (80-190)			

Checking values in brackets

# D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

MAN 11,1 1 1 -2-

Testoil-ISO 4113

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
295 + 335 DR 351 DR	0,70	0,32	12,8 - 12,9 12,2 - 12,4
and 345 + 335 DR		0,20 0	11,5 - 11,6 10,9 - 11,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 20,2 a

1. Edition

En

PE 8 P 120 A 620/4 LS 325 RSUV 250-600 P 8 A 321 R  
1-4-7-6-8-5-2-3 je 45° ± 0,50 (± 0,75°)

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -

company KHD

engine BA 8 M 816

Komb.-Nr. 0 401 878 103

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,0-2,1$   
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	14,9±0,1	28,7-29,1 (28,4-29,4)	0,5(0,9)			
250	6,0-6,2	1,6-2,3 (1,3-2,6)	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm 11	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	
loose	775	0,3-1,0 X = 4,0	-	-	-	ca. 25	250	5,6	600	14,9-15,0
							250	6,0-6,2	220	16,2-16,8
							260-320	2,0	350	14,9-15,0
ca. 65	13,9	640-650								
2a	4,0	660-690								
	800	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to ... rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery 5 Idle rev/min 6		4a Idle stop Control rod travel mm 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7		rev/min 8	
Not known. Carry out adjustment on engine.		640-650 *	-	-		100	19,5-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

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Testoil-ISO 4113

F1

F1

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 Vol 7,0 e  
6. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 367

RQV 250-1200 PA394/2R (1)

supersedes 480

RS 367Z

PA394/2R (2)

company Volvo

RS 367Y

PA394/2R (3)

engine TD 70 F

(1-174kW-237PS)

(2-155kW-210PS)

(3-180kW-245PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9+0,1	12,1 - 12,3	0,4(0,8)	10,9+0,1	10,0 - 10,2	2,5 <sup>±</sup> 0,1** (max. 2,2-2,9)
250	4,7-4,8	1,1 - 1,5	0,3(0,6)	4,7-4,8	1,1 - 1,5	

Adjust the fuel delivery from each outlet according to the values in

\*\*In the case of greater dispersion after the delivery-valve spring pre-tension accordingly.

## B. Governor Settings

(1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1200 1500	15,2-17,8 0-1	-	-	-	ca. 12	100 250 420-470 600	min. 6,3 4,7-4,9 2,0 0-1	200 1230	0,3-1,2 8,2
ca. 68	10,9 4,0	1260-1270 1370-1400				3a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤ travel Control rod travel mm	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
(1) 700	LDA 0,7 bar 121,0-123,0 (118,0-126,0)	1260-1270*	LDA 700	0 bar 78,5 - 80,5 (75,5 - 83,5)	100 250	165 - 200 11-15)** Dispersion max. 3		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

F2  
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## B. Governor Settings

367Z (2)

VOL 7,0 e

- 2 -

1

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca.12	100	min.6,5	200	0,3-1,2
							250	4,7-4,8	230	8,2
ca.67	9,9 4,0 1450	1265-1275 1360-1385 0 - 1,0				3a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed	Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	rev/min	Control rod travel mm
1	2	3	4	6	9
700	LDA 0,7 bar 100,0-102,0 (97,0-105,0)	1265-1275*	LDA 700 0 bar 78,5 - 80,5 (75,5 - 83,5)	100 165,0-200,0 = 20,0-21,0 mm RW 250 11-15 Streug. max. 3)**	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## B. Governor Settings

367Y (3)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1200	15,2-17,8				ca.12	100	min. 6,3		
	1450	0-1					250	4,7-4,8		
ca.68	11,3 4,0	1240-1250 1355-1390				3a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed	Starting fuel delivery idle switching point	Torque-control travel
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	rev/min	Control rod travel mm
1	2	3	4	6	9
LDA 700	0,7 129,0-131,0 (126,0-134,0)	1240-1250*	LDA 700 0 bar 78,5 - 80,5 (75,5 - 83,5)	100 165,0-200,0 250 11-15** Dispersion max. 3	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

En

F3

F3

# D. Adjustment Test for Manifold Pressure Compensator

VOL 7,0 e

- 3 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing XXXXXXXX

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod dimension: difference (1) mm
367 + 394/2R	0,48	0,27	11,5 - 11,6 10,3 - 10,5
367Z + 394/2R	0,36	0,23	10,6 - 10,7 9,9 - 10,1
367Y + 394/2R	0,53	0,26	11,8 - 11,9 10,3 - 10,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 STE 10,0b

6. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 721 RS 369

RQ 300/1300 PA 412 DR

RQV250-1300 PA 413 DR

supersedes 1.82

company: Steyr

engine: WD 615.60

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,80-2,90$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,5+0,1	11,7 - 11,9	0,4(0,75)			
250	9,0-9,2	1,8 - 2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

RQ 412 DR

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	11,5	1345-1360	300	6,0	100	min. 7,4	1300	12,5-12,6
										700	12,8-12,9
				4,0	1405-1435			300	5,9-6,1	900	12,6-12,8
				1550	0 - 1,0			390-430	=2,0	1100	12,6-12,7

Torque-control travel  
on flyweight assembly dimension a = 0,2 mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
LDA	0,7 bar			LDA	0,7 bar		
1300	117,0 - 119,0 (114,0 - 122,0)			700	107,0 - 111,0 (104,0 - 114,0)	100	115,0 - 135,0
				LDA	0 bar		
				700	100,0 - 102,0 (97,0 - 105,0)		

Checking values in brackets

7.83

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F5

F5

**B. Governor Settings**

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1300 1550	15,2-17,8 0-1	-	-	-	ca. 15	100 250 420-480 500	min. 10,5 9,3-9,5 =2,0 0-1	1300 1000 700	12,6 12,9 13,0
ca. 47	11,6 4,0	1340-1350 1450-1480				3a				

Torque control travel a = 0,4 mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1300	0,7 bar 115,0-117,0 (112,0-120,0)	1340-1350*	LDA 700	0,7 bar 108,0-111,0 (105,0-114,0)	100	120 - 130		
			LDA 700	0 bar 102,0-104,0 (99,0-107,0)	100-170	(80-190)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**D. Adjustment Test for Manifold Pressure Compensator**Test at n = rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm
369 + 412 DR	0,70	0 0,31 0,27	12,8 - 12,9 12,5 - 12,6 12,7 - 12,8 12,6 - 12,7
369 + 413 DR	0,7	0,35 0,33 0	13,0 - 13,1 12,9 - 13,0 12,7 - 12,8 12,8 - 12,9

En

# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 r 3  
2. Edition

En

PES 6 P 120 A 720 LS 388 RQ 250/1050 PA 452

Komb.-Nr. 0 402 046 244

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

supersedes 9.82

company: MAN

engine: D 2566 MKF  
235 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 3,0-3,1 \\ (2,95-3,15) \end{matrix}$  mm (from BDQyl. 6; RW = 9,0-12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5 (0,9)			
250	6,3-6,5	1,1-1,7	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6		Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10		Control rod travel mm 12	
600	19,2-20,8	600	20,0	10,3	1095-1110	250	6,4	100	min. 7,9	1100	11,3-11,4
VH = max. 46°				4,0	1175-1205			250	6,3-6,5	750	13,1-13,2
				1350	0-1,0			340-380	= 2,0	890	12,7-12,9
										960	11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,7 mm Speed regulation: At 1095-1110 min<sup>-1</sup> 1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery idle speed rev/min 6	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes/mm 7	
LDA 750	1,0 bar 217,0-220,0 (214,0-223,0)			LDA 500	0,34 bar 144,0-150,0 (141,0-153,0)	100	205,0-225,0 (201,0-229,0)
LDA 1050	1,0 bar 180,0-186,0 (177,0-189,0)			LDA 500	0 bar 101,0-104,0 (98,0-107,0)		

Checking values in brackets

7.83

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

MAN 11,1 r 3

Testoil-ISO 4113

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..LS 388 with RQ..PA 452	0,34	1,0 0 0,61	13,1 - 13,2 9,4 - 9,5 10,5 - 10,6 12,1 - 12,4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1q7  
2. Edition

En

**Testoil-ISO 4113**

PES 6 P120 A 720 LS 388 RQ250/1100 PA 509 (1)  
RQV250-1100 PA 504 (2)

supersedes 3.80

company: MAN

engine: D 2566 MK  
206 Kw (280 Ps)

Komb.-Nrn. 0 402 046 208 (1)  
0 402 046 209 (1)  
0 402 046 204 (2)  
0 402 046 205 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

(2,95-3,15)

Port closing at prestroke

3,00-3,10

mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4-11,5	17,7 - 18,1	0,5(0,9)			
250	6,2-6,4	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

RQ - 509

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel rev/min mm 1 2		Setting point		Test specifications		Setting point		Test specifications		Control rod travel	
rev/min 1	mm 2	rev/min 3	mm 4	mm 5	rev/min 6	rev/min 7	mm 8	rev/min 9	mm 10	rev/min 11	mm 12
600	19,2-20,8	600	20,0	9,2	1145-1160	250	6,3	100	min.7,8	1100	10,2-10,3
1100				4,0	1180-1210			250	6,2-6,4	975	10,4-10,6
1400	0 - 1,0							350-390	= 2,0	875	11,0-11,1
Breakaway										750	11,4-11,5

Torque-control travel  
on flyweight assembly dimension a = 0,45 mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
LDA 750	0,7 bar 177,0 - 181,0 (174,0 - 184,0)			LDA 650	0,7 bar 171,0 - 177,0	100	215,0-235,0
				LVA 500	0,31 bar 134,0 - 140,0	250	12,0- 18,0
LDA 1100	0,7 bar 166,0 - 172,0 (162,5 - 175,5)			LDA 500	0 bar 102,0 - 106,0	100-170	(80-190)

Checking values in brackets

( increase by 4-5 ± 3 cm<sup>3</sup>

7.83

## B. Governor Settings

RQV - 504

MAN 11,1 q7 -2-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1100	15,2-17,8				ca. 15	100	min.7,8	250	1,2
							250	6,2-6,4	500	4,0-4,3
							395-455=	2,0	1150	8,4
ca.66	9,2	1140-1150				3a				
	4,0	1220-1250								
	1400	0 - 1,0								

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar		LDA	0,7 bar			1100	11,4-11,5
750	177,0 - 181,0	1140-1150*	650	171,0 - 177,0	100	215,0-235,0	975	10,4-10,6
	(174,0 - 184,0)		LDA	0,31 bar	250	12,0- 18,0	875	11,0-11,1
LDA	0,7 bar		500	134,0 - 140,0			750	11,4-11,5
1100	166,0 - 172,0		LDA	0 bar	100-170 (80-190)			
	(162,5 - 175,5)		500	102,0 - 106,0				

Checking values in brackets ( increase by 4-5 ± 3 cm<sup>3</sup>

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel-diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm
388 + 509	0,7	0,43	11,4 - 11,5
		0,31	10,9 - 11,1
		0	10,3 - 10,4
			9,2 - 9,3
388 + 504	0,7	0,43	11,4 - 11,5
		0,31	10,9 - 11,1
		0	10,3 - 10,4
			9,2 - 9,3

En



# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,1 q 11

1. Edition

En

PES 6 P 120 A 720 LS 388 RQ 250/1100 PA 658-6

Komb.-Nr. 0 402 046 260, G 402 046 261

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes

company: MAN

engine: D 2566 MKF  
235 kW (320 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
600	19,2-20,8	600	20,0	10,3	1145-1160	250	6,4	100	min.7,9	1100	11,3-11,4
VH = max. 46°				4,0	1185-1215			250	6,3-6,5	750	13,1-13,2
				1400	0 - 1,0			350-390	=2,0	900	12,6-12,7
										1000	11,8-12,0

Torque-control travel  
on flyweight assembly dimension a =

0,7

mm

Speed regulation: At

1145-1160 min<sup>-1</sup>

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
LDA 750	1,0 bar 217,0-220,0 (214,0-223,0)	-		LDA 650	1,0 bar 208,0-213,0 (205,0-216,0)	100	205,0-225,0
LDA 1100	1,0 bar 180,0-185,0 (177,0-188,0)			LDA 500	0,34 bar 145,0-150,0 (142,0-153,0)		
				LDA 500	0 bar 101,0-104,0 (98,0-107,0)		

Checking values in brackets

6,83

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# D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 11 -2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P.. LS388 +RQ.. PA658-6	1,0	0 0,34 0,61	13,1-13,2 9,4-9,5 10,9-11,0 12,5-12,9

## Notes

(1) wh/n n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 120 A 720 LS 388 RQ 25Q/1100 PA 658-7

Komb.-Nr. 0 402 046 263, 0 402 046 262

supersedes MAN  
company: D 2566 MK  
engine: 206 kW (280 PS)

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,0-3,1$  mm (from BDC)  $7yl. 6$   
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,4+0,1	17,7-18,0	0,5(0,9)			
250	6,2-6,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PPG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9		Torque control rev/min 11		Control rod travel mm 12	
600	19,2-20,8	600	20,0	9,2	1145-1160	250	6,3	100	min.7,8	1100	10,2-10,3		
VH=max.46°				4,0	1180-1210			250	6,2-6,4	750	11,4-11,5		
				1400	0-1,0			350	390=2,0	875	11,0-11,1		
										975	10,4-10,6		

Torque-control travel  
on flyweight assembly dimension a = 0,45 mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery idle speed rev/min 6	
	cm <sup>3</sup> /-1000 strokes 2				cm <sup>3</sup> /-1000 strokes 5		cm <sup>3</sup> /1000 strokes/mm 7
LDA 750	0,7 bar 177,0-180,0 (174,0-183,0)	-		LDA 500	0,31 bar 131,0-136,0 (128,0-139,0)	100	205,0-225,0
LDA 1100	0,7 bar 160,0-165,0 (157,0-168,0)			LDA 500	0 bar 103,0-106,0 (100,0-109,0)		

Checking values in brackets

# D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 16

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..LS 388 +RQ..PA 658-7	0,31	0,70 0 0,43	10,3-10,4 11,4-11,5 9,2-9,3 10,9-11,1

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 q 15

1. Edition

En

PES 6 P 120 A 720 LS 388 RQV 250-1050 PA 671-2

Komb.-Nr. 0 402 046 278

supersedes

company MAN

engine: D 2566 MK/319  
235 kW

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 mm (from BDC) Zyl. 6; RW=9,0-12,0 mm  
(2,95-3,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1140	15,2-17,8	-	-	-	ca. 11	100	min.7,9	300	1,5-1,8
ca. 61	10,3 4,0 1300	1090-1100 1180-1210 0-1,0					250	6,3-6,5	850	5,8-6,0
							385-445	=2,0	1050	7,6
						③a				

Torque control travel a = 1,8 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 750	1,0 bar 217,0-220,0 (214,0-223,0)	1090-1100*	LDA 500	0,34 bar 145,0-150,0 (142,0-153,0)	100	205,0-225,0 (201,0-229,0)	750	13,1+0,1
LDA 1050	1,0 bar 180,0-185,0 (177,0-188,0)		LDA 500	0 bar 101,0-104,0 (98,0-107,0)			1050	11,3+0,1
							850	12,6+0,2
							950	11,7+0,3

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 15

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 P..LS 388 +RQV..PA 671-2	1,0	0 0,34 0,61	13,1-13,2 9,4-9,5 10,9-11,0 12,5-12,9

Notes.

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 q 14

1. Edition

En

PES 6 P 120 A 720 LS 388

RQV 250-1100 PA 671-1

Komb.-Nr. 0 402 046 277

supersedes

company: MAN

engine: D 2556 MK  
235 kW

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,0-3,1$  mm (from BDC) Zyl. 6; RW=9,0-12,0 mm  
(2.95-3.15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 11	100	min. 7,9	300	1,5-1,8
ca. 64	10,3 4,0 1350	1140-1150 1220-1250 0-1,0					250 385-445=2,0	6,3-6,5	850 1100	5,8-6,0 8,1

Torque control travel a = 1,8 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 217,0-220,0 (214,0-223,0)	1140-1150*	LDA 500	0,34 bar 145,0-150,0 (142,0-153,0)	100	205,0-225,0 (201,0-229,0)	750 1100	13,1+0,1 11,3+0,1
LDA 1100	1,0 bar 180,0-185,0 (177,0-188,0)		LDA 500	0 bar 101,0-104,0 (98,0-107,0)			860 985	12,6+0,2 11,7+0,8

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 14

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P..LS 388 +RQV..PA 671-1	1,0	0 0,34 0,61	13,1-13,2 9,4-9,5 10,9-11,0 12,5-12,9

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)



①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 c

2. Edition

En

PE 6 P 120 A 321 RS 359 RQV 275-1200 PA 538  
Komb.-Nr. 0 401 856 148  
Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

supersedes 4.81

company: RVI

engine: MID 06.20.30  
140 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{3,5-3,6}{(3,45-3,65)}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,5-9,6	13,0-13,2	0,5(0,9)			
275	4,6-4,8	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1280	15,2-17,8	-	-	-	ca. 9	100 275	min. 6,2 4,6 - 4,8	275 950 1200	1,1-1,3 5,6-5,8 7,6-7,8
ca. 63	8,5 4,0 1450	1240-1250 1300-1330 0-1,0				3a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min ④a	rev/min	cm <sup>3</sup> /1000 strokes ⑤b	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1200	130,0-132,0 (127,0-135,0)	1240-1250*	-	-	100	190,0-210,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ①A and Governors

**40**

WPP 001/4 DAF 11,6k3  
2. Edition

En

PE 6 P 110 A 320 RS 372-1 RSV 250-1100 P5/458 R  
P5/458-1

supersedes 11.82  
company DAF  
engine DKTD 1160  
191 kW (260 PS)

See Service Information VDT-I-DAF 004.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,8-2,9$   
 $(2,75-2,95)$  mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,9+0,1	13,5 - 13,7	0,4 (0,8)			
250	6,6-6,8	0,7 - 1,1	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	250	6,2	400	12,1+0,1
	x = 4,25						250	6,5-6,8	300	12,3+0,5
ca. 51	10,9	1140-1150					640-700	= 2,0		
②a	4,0	1275-1305								
	1425	0,3 - 1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)								
rev/min 1	cm <sup>3</sup> /1000 strokes 2	Note: changed to ... rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 134,5-136,5 (132,0-139,0)	1140-1150*	LDA 600	bar 125,0-128,0 (122,0-131,0)	100	245,0-285 = 19,5-21 mm RW	0 250	6,6-6,8

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

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F20

F20

# D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 k 3 - 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 372-1 + .. P5/458 u. ..P5/458-1	0,30	0,70 0 0,26	11,8-11,9 11,9-12,0 11,3-11,4 11,5-11,7

Notes.

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 k 2  
2. Edition

En

PE 6 P 120 A 320 RS 372-1 Y RSV 250-1100 P5/458 R

See Service Information VDT-I-DAF 004

Values only apply to test nozzle-and holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersede 9.82

company DAF

engine DKX 1160

243 kW

Komb.-Nr. 0 401 876 261

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,8-2,9$  mm (from BDC)  
( $2,75-2,95$ )

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
850	11,4+0,1	18,3-18,6	0,5 (0,9)			
250	6,4-6,6	1,1-1,5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,0	400	11,6-11,7
	x = 5,0						250	6,4-6,6	300	11,8-12,3
							620-680	= 2,0		
ca. 54	10,4	1140-1150								
2a	4,0	1270-1300								
	1425	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit	3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)					Idle			
rev/min	cm <sup>3</sup> /1000 strokes	Note: changed to ... rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 850	0,7 bar 183,0-186,0 (180,0-189,0)	1140-1150*	LDA 600	0 bar 135,0-138,0 (132,0-141,0)	100	315,0-355,0 (311,0-359,0) = 19,5-21,0 mm RW	250	6,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

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Testoil-ISO 4113

# D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 k 2

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 372-1y + ..P5/458 R	0,37	0,70 0 0,30	11,0-11,1 11,4-11,5 10,0-10,1 10,3-10,7

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps **(1A)** and Governors

**40**

WPP 001/4 VOL 7,0 h  
4. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 390 RSV 200 - 750 P 4/421  
Komb.-Nr. 0 401 876 249 RSV 650-750 P 4/421

supersedes 11.82  
company Volvo  
engine TD 70 GG

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

(2,95-3,15)  
Port closing at prestroke 3,00-3,10 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,7+0,1	10,2 - 10,4	0,4(0,8)			2,5+0,1** (max. 2,2-2,9)
300	5,4-5,6	1,9 - 2,9	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in    
\*\*In the case of greater dispersion after the delivery-valve spring pre-tension

## B. Governor Settings

<b>(1)</b> Upper rated speed rev/min			Intermediate rated speed			<b>(4)</b> Lower rated speed			<b>(3)</b> Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 4,0				ca.18	300	5,5		
ca.37		750-755=9,7 775-785=4,0 1000=0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>(2b)</b> Full-load stop		<b>(6)</b> Rotational-speed limit	<b>(3a)</b> Fuel delivery characteristics		Starting fuel delivery <b>(5)</b>		<b>(4a)</b> Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	102,0 - 104,0 ( 97,0 - 105,0)	750-755*						

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 STE 10,0a

2. Edition

En

supersedes 1.80

company: Steyr

engine: WD 615.00

PE 6 P 100 A 721 RS398

RQV 250-1300 PA480R (1)

RQ 300/1300 PA481R (2)

Komb.-Nrn. 0 401 856 145 (1)

0 401 856 144 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,50-3,60$  mm (from BDC)  
(3,45-3,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1300	11,3-11,4	9,3 - 9,5	0,35(0,6)	11,3-11,4	9,3 - 9,5	n 1300
250	9,0-9,2	1,8 - 2,2	0,35(0,55)	8,5-8,7	1,2 - 1,8	300

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

RQV... 480R

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca. 14	100 250	min. 10,5 9,0-9,2	250 650	0,8-1,0 4,4-4,7
ca. 47	10,3 4,0 1550	1340-1350 1405-1435 0 - 1,0				415-475 (3)			1340	8,8

Torque control travel a = 0,4 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	93,0 - 95,0 (91,0 - 97,0)	1340-1350*	600	77,0 - 80,0 (74,5 - 82,5)	100	100,0-120,0	1300 1050 500	11,3-11,5 11,4-11,6 11,6-11,7

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

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**B. Governor Settings**

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,5-16,5	600	16,0	10,3	1345-1355	300	6,0	100	min. 7,5	1300	11,3-11,4
				4,0	1400-1430			300	5,9-6,1	1030	11,3-11,6
1300	Breakaway							395-435	=2,0	600	11,7-11,8
1550	0 - 1										

Torque-control travel on flyweight assembly dimension a = 0,2 mm Speed regulation At 1 mm less control rod travel

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm	Control rod travel
1	2	3	4	5	6	7	
1300	92,0 - 94,0 (89,0 - 97,0)		600	81,0 - 84,0 (78,0 - 87,0)	100	116,0 - 126,0	

Checking values in brackets

**B. Governor Settings**

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm	Control rod travel
1	2	3	4	5	6	7	

En Checking values in brackets



# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 b 2

2. Edition

En

PES 6 P 120 A 320 RS 417 RQV 300-1150 PA 527-1K

supersedes 8.82

company RVI

engine MIDR 062030

Komb.-Nr. 0 402 046 247

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>2,8-2,9</sup>  
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control v. re) mm 6
1150	8,5-8,6	14,8-15,0	0,5 (0,9)			
300	4,1-4,3	1,8-2,4	0,5 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

Port closing mark at 6° camshaft after port closing for 1st. cylinder at control-rod travel 9.0-12.0 mm.

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 10	100	min. 5,7	250	0,4-0,7
ca. 58	7,5	1205-1215					300	4,1-4,3	550	3,6-3,7
	4,0	1275-1305							850	5,1-5,2
	1450	0 - 1,0				330-445			1150	7,5

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	147,5-149,5 (144,5-152,5)	1205-1215*	750	132,0-138,0 (129,0-141,0)	100	130,0-150,0	1150	8,5+0,1
			500	80,0-86,0 (77,0-89,0)	300	18,0-24,0 100-220 (80-240)	350	7,0+0,4
							750	7,7+0,2
							500	7,2+0,3

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.83

Testoil-ISO 4113

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# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 d 1

2. Edition

En

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 2.83

company: RVI

engine: MIDR 062045  
206 kW (280 PS)

Komb.-Nr.

0 402 046 249

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

**A. Fuel Injection Pump Settings** Port-closing mark 10,5° camshaft after port closing of cylinder 1.

Port closing at prestroke 2,8 - 2,9 mm (from BDC) (2,75-2,95)						
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,3+0,1	17,8 - 18,0	0,5(0,9)			
275	3,4-3,6	0,7 - 1,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 8	200	min. 5,2	250	1,0-1,2
ca. 64	9,3	1155-1165					275	3,4-3,6	530	4,0-4,6
	4,0	1220-1250							820	5,9-6,1
	1350	0 - 1,0				280-395			100	8,1

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 178,0-180,0 (175,0-183,0)	1155-1165*	LDA 700	0,7 bar 163,0-171,0 (160,0-174,0)	100	130,0-150,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

Testoil-ISO 4113

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# **D. Prova dell'anticipo con arresto dipendente dalla pressione di alimentazione (LDA)**

- 2 -

RVI 8,8 d 1

Prova a n = 500 min - pressione in aumento in diminuzione - sovrappressione in bar

Pompa/Regolatore	Regolazione pressione = bar	Misurazione pressione = bar	Corsa asta - Diminuzione Differenza mm (1)
PES 6 P..RS 419 + RQV..PA 495	0,25	0,70 0 0,20	9,7 - 9,8 10,3 - 10,4 8,3 - 8,5 8,8 - 9,0

Note:

(1) rispetto a n =

min e pres-  
sione relativa =

bar (= corsa massima dell'asta a pieno carico)

①

# Test Specifications

## Fuel Injection Pumps ①

### and Governors

WPP 001/4 RVI 12,0 c

2. Edition

En

superseded 10.81

company: RVI

MIDS 063540

engine: 195 kW (265 PS)

Komb.- Nr. 0 402 046 219

**Testoil-ISO 4113**

PES 6 P 120 A 320 RS 426 RQV 250-1100 PA 570

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke  $2,8-2,9$   
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	10,3+0,1	18,0 - 18,3	0,5(0,9)			
250	4,9-5,1	1,3 - 1,9	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in  

Mark for start of pump delivery on tester body 12° after start of  
pump delivery, cylinder No. 1 = 9,0 - 12,0 mm.

### B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 9	100	min. 5,5	200	0,7-1,0
ca. 61	8,1	1140-1150					250	3,9-4,1	500	3,4-3,6
	4,0	1220-1250							800	4,8-4,9
	1400	0 - 1,0				275-400			1100	6,9
						③a				

Torque control travel a = 1,2 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed  (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)  Control rod travel mm	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
LDA 650	0,7 bar 180,0-183,0 (177,0-186,0)	1140-1150 *	LDA 1100	0,7 bar 170,0-173,0 (167,0-176,0)	100	135,0-155,0	1100 650 1030 890	9,1+0,2 10,3+0,1 9,4+0,1 9,9+0,2
			LDA 500	0 bar 122,0-126,0 (119,0-129,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.83

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G6

66

# D. Adjustment Test for Manifold Pressure Compensator

RVI 12,0 c - 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P.. RS 426 + .. PA 570	0,9	0 0,29 0,24	10,3 - 10,4 8,6 - 8,7 9,8 - 9,9 9,0 - 9,2

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 a

3. Edition

En

**Testoil-ISO 4113**

PES 6 P 120 A 320 LS 429

RQV 250-1100 PA 582 (1)

superseded 81

company MAN

RQ 250/1100 PA 581 (2)

engine D2566 MKUL

235 kW (320 PS)

 Komb.-Nr. 0 402 046 223 (1)  
 0 402 046 222 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

 Port closing at prestroke  $3,0 - 3,1$  mm (from BDC) Zyl.6  
 (2,95 - 3,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	12,9 +0,1	22,0 - 22,4	0,5(0,9)			
250	6,2-6,4	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

RQV .. PA 582

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1100	15,2-17,8				ca. 13	100	min.7,8	250	1,6-1,7
ca. 68	10,4	1140-1150					250	6,2-6,4	500	4,0-4,3
	4,0	1225-1255							800	5,5-5,7
	1400	0 - 1,0				355-475			1100	8,1
						③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9 +0,1
LDA	1,0 bar	1140-1150*	LDA	1,0 bar	100	215,0-235,0	1100	11,4
750	220,0-224,0 (217,0-227,0)		1100	185,0-191,0	250	12,0- 18,0	750	12,9
			650	212,0-218,0			895	12,5
			LDA	0,29 bar			980	11,7
			500	138,0-144,0				
			LDA	0 bar				
			500	115,0-119,0				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

\* Checking tolerance  $\pm 3 \text{ cm}^3$ 

7.83

G8

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## B Governor Settings

RQ.. PA 581

MAN 11,4 a

-2-

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
Control rod travel		Setting point		Test specifications		Setting point		Test specifications		Control rod travel	
rev/min	mm	rev/min	mm	mm	rev/min	rev/min	mm	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	10,4 4,0	1145-1160 1185-1215	250	6,3	100 250	min.7,8 6,2-6,4	1100 1005 925 750	11,4-11,5 11,7-12,0 12,5-12,7 12,9-13,0
		1300			0 - 1,0			335-	875=2,0mm		

Torque control travel  
on flyweight assembly dimension a

mm

Speed regulation At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3		4	5	6	7
LDA 750	1,0 bar 220,0-224,0 (217,0-227,0)	-		LDA 1100 650 LDA 500 LDA 500	1,0 bar 185,0 - 191,0 212,0 - 218,0 0,29 bar 138,0 - 144,0 0 bar 115,0 - 119,0	100	215,0-235,0

Checking values in brackets

\* Checking tolerance  $\pm 3 \text{ cm}^3$

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)
.. LS 429 - RQV..PA 582 + RQ..PA 581	1,0	0 0,29 0,58	12,9 - 13,0 9,6 - 9,7 10,5 - 10,6 12,3 - 12,5

Notes

(1) when n =

En

rev/min and  
gauge pressure

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 9,5 a 2

2. Edition

En

superseded by 6.82  
Daimler-Benz  
company: OM 409  
engine:

Komb.-Nr. 0 402 075 001

PES 5 P 110 A 820 LS 434

RSV 350-750 P 1/487

1 - 3 - 5 - 4 - 2 je 72°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 3,0-3,1 \\ (2,95-3,15) \end{matrix}$  mm (from BD)  $\begin{matrix} 1. 5; \\ RW = 9,0 - 12,0 \end{matrix}$  mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	13,1 $\pm 0,1$	13,5 - 13,7	0,4(0,8)			
350	7,7 - 7,9	1,1 - 1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	-	-	-	-	-
	x = 2,5									
ca. 34 ⑤	12,1 4,0 850	750-755 785-795 0,3-1,7								

Set idle-speed auxiliary spring at 2 mm control-rod travel

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	5	6	7	8	9	10
730	135,0-137,0 (132,0-140,0)	750-755*	-	-	100	130,0-150,0	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2



# Test Specifications Fuel Injection Pumps and Governors

PES 8 P 120 A 320 RS 437 RQ 750 PA 596

Komb.-Nr. 0 402 048 038

1 - 8 - 4 - 2 - 7 - 3 - 6 - 5 je  $45^\circ \pm 0,5^\circ (0,75^\circ)$ 

supersedes 81

company RVI

engine MIVS (R) 083 530  
250 kW (340 PS)

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

## A. Fuel Injection Pump Settings

Port closing at prestroke

2,80-2,50  
(2,75-2,95) mm (from BDØyl. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,1+0,1	26,7 - 26,9	0,5(0,9)			
250	5,0-5,2	1,5 - 2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,1 4,0 900	750-755 776-789 0 - 1,0	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: 750-755 min<sup>-1</sup>1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /100 strokes 7
700	267,0-269,0 (264,0-272,0)	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 9,8 b 1

2. Edition

En

PE 6 P 120 A 321 RS 438 RQV 275-1200 PA 648

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

supersedes 83

RVI

company

MID 062045

engine

Komb.-Nr. 0 401 856 153

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

3,5-3,6

(3,45-3,65)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,2+0,1	13,4-13,7	0,5(0,9)			
275	5,9-6,1	0,7-1,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 11	100	min. 7,5	250	0-0,9
ca. 65	10,2	1240-1250					275	5,9-6,1	570	4,7-5,0
	4,0	1335-1365							880	6,1-6,3
	1500	0-1,0				270-365			1200	8,3

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high, idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	cm <sup>3</sup> /1000 strokes 4	rev/min 5	cm <sup>3</sup> /1000 strokes 6	rev/min 7	cm <sup>3</sup> /1000 strokes 8	rev/min 9	Control rod travel mm 10
1200	134,0-137,0 (131,0-140,0)	1240-1250*	-	-	-	100	180,0-200,0	-	-
						275	7,0-13,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

Testoil-ISO 4113

G12

G12

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 u

3. Edition

En

PE 6 P 110 A 720 RS 441  
Komb.-Nr. 0 401 876 252

RSV 250-1200 P 5/493

supersedes 1.83  
company DAF  
engine DHS 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,8-2,9$   
 $(2,75-2,95)$  mm (from BDC) RW=9,0-12,0 mm

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,2+0,1	13,7-13,9	0,4(0,8)			
250	5,0-5,2	0,7-1,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 X = 5,0	-	-	-	ca. 24	250	4,6	400	12,4-12,5
							250	5,0-5,2	300	12,6-13,1
							525-585=2,0			
ca. 58	11,2	1240-1250								
2a	4,0	1330-1360								
	1500	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	cm <sup>3</sup> /1000 strokes 5	6	rev/min 7	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 136,5-138,5 134,0-141,0	1240-1250*	LDA 600	0 bar 91,5-94,5 (89,0-97,0)	100	245,0-285,0 (241,0-289,0) =19,5- 21,0 mm RW	250	5,1	

Checking values in brackets

\* 1 mm less control rod travel than col 2

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7.83

G13

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# D. Adjustment Test for Manifold Pressure Compensator

DAF 11,6 u

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE 6 P..RS 441 + RSV..P 5/493	0,70	0 0,36 0,30	12,2-12,3 10,2-10,3 11,7-11,8 10,9-11,3

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 11,6 u 2

1. Edition

En

PE 6 P 110 A 720 RS 441-1 RSV 250-750 P 7/479-1

Komb.-Nr. 0 401 876 270

supersede<sup>3</sup>

company DAF

engine DHS 825 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,8 - 2,9$   
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	11,6+0,1	14,5-14,7	0,4(0,75)			
250	4,8-5,0	0,9-1,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 18	250	4,9	-	-
	x = 4,0						250	4,8-5,0		
ca. 45	10,6	790-795					250-290	= 2,0		
2a	4,0	810-825						**		
	950	0,3-1,7								

The numbers denote the sequence of the tests Set auxiliary idle spring at 2.0 mm control-rod travel.

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
750	144,5-146,5 (142,0-149,0)	790-795*		-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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7.83

G15

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# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,4 1 4

3. Edition

En

**Testoil-ISO 4113**

PES 6 P 110 A 820 LS 442 RSV 350-750 P 1/487  
Komb.-Nr. 0 402 076 052

supersedes 1.83  
company: Daimler-Benz  
engine: OM 407  
121 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>3,2-3,3</sup>  
(3,15-3,35) mm (from BDC) <sup>4</sup>yl. 6

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
730	12,1 +0,1	11,9 - 12,1	0,4(0,8)			
350	8,1-8,3	1,3 - 2,1	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	-	-	-	-	-
	x=2,5									
⑤ ca.35	11,1	750-755								
	4,0	785-795								
	850	0,3-1,7								

Set idle-speed auxiliary spring at 2 mm control-rod travel

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
730	119,0 - 121,0 (116,0 - 124,0)	750-755*		-	-	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 8,3 0

1. Edition

En

PE 6 P 100 A 720 RS 447

RSV 250-1200 P5/493

Komb.-Nr. 0 401 876 260

supersedes

company DAF

engine DHT 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,2 - 3,3$  mm (from BDC)  
(3,15-3,35)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	11,4+0,1	11,8-12,0	0,3(0,6)			
250	5,3-5,5	0,7-1,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
Loose	800	0,3-1,0	-	-	-	ca. 24	250	4,9	400	11,6-11,7
	x = 5,0						100	min. 7,0	300	11,8-12,1
ca. 58	10,4	1240-1250					250	5,3-5,5		
2a	4,0	1325-1355					540-600	= 2,0		
	1530	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 1000	0,7 bar 118,0-120,0 (116,0-122,0)	1240-1250*		LDA 600	0 bar 94,0-97,0 (92,0-99,0)	100	190,0-210,0 bei 19,5-21,0 mm R <sub>W</sub>	0 -	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.83

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# D. Adjustment Test for Manifold Pressure Compensator

DAF 8,3 e

- 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P..RS447 + RSV..P5/493	0,32	0,70 0 0,23	11,1 - 11,2 11,4 - 11,5 10,4 - 10,5 10,5 - 10,9

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)



# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BAO 10,6 a

2. Edition

En

PES 4 P 120 A 320 RS 451  
Komb.-Nr. 0 402 044 020

RQV 350-900 PA 618

supersedes 1.83

company: Baudouin

engine: DNP 4

107 kW (145 PS)

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,6+0,1	19,7-19,9	0,5(0,9)			
350	7,6-7,8	2,8-3,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	940	15,2-17,8	-	-	-	ca. 30	100	min. 9,2	325	1,1-1,3
ca. 60	11,6 4,0 1150	940-950 1000-1030 0-1,0				350-440 ③a	350	7,6-7,8	500 750 900	3,1-3,8 6,0-6,4 8,0

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	197,0-199,0 (194,0-202,0)	940-950*	-	-	100	175,0-195,0 (171,0-199,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

G19

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CAS

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BAO 13,2 a  
2. Edition

En

PES 5 P 120 A 320 RS452 RQV 350-900 PA 618

1 - 2 - 4 - 5 - 3 je 72° ±0,5° (±0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 83  
company Baudouin  
engine DNP 5

Komb.-Nr. 0 402 045 025

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,6+0,1	19,7-19,9	0,5(0,9)			
350	7,6-7,8	2,8-3,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	940	15,2-17,8	-	-	-	ca. 30	100	min. 9,2	325	1,1-1,3
ca. 60	11,6	940-950					350	7,6-7,8	500	3,1-3,8
	4,0	1000-1030							750	6,0-6,4
	1150	0-1,0				350-440			900	8,0

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	197,0-199,0 (194,0-202,0)	940-950*	-	-	100	175,0-195,0 (171,0-199,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

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# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 11,9 a

1. Edition

En

PE 6 P 120 A 720 LS 470 RQ 250/1100 PA 684  
Komb.-Nr. 0 402 046 288  
Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

supersedes-  
company: MAN  
engine: D 2866 KF  
265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,8 - 2,9}{(2,75-2,95)}$  mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm 2		Setting point rev/min 3		Test specifications Control rod travel mm 5		Setting point rev/min 7		Test specifications Control rod travel mm 10		Control rod travel mm 12	
rev/min 1					rev/min 6					rev/min 11	
600	19,2-20,8	600	20,0	10,3 4,0 1300	1145-1160 1180-1210 0-1,0	250	5,3	100 250 315-355 = 2,0	min.6,8 5,2-5,4	750 1100 935 990	12,5-12,6 11,3-11,4 12,4-12,6 11,7-12,0

Torque-control travel  
on flyweight assembly dimension a =

0,45 mm

Speed regulation: At 1145-1160 min<sup>-1</sup>1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
LDA 750	1,0 bar 238,0-240,0 (235,0-243,0)		-	LDA 650	1,0 bar 239,0-245,0 (236,0-248,0)	100	225,0-245,0 (221,0-249,0)
LDA 1100	1,0 bar 213,0-219,0 (210,0-222,0)			LDA 500	0 bar 139,0-141,0 (136,0-144,0)		

Checking values in brackets

9.83

Testoil-ISO 4113

# D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..LS470 + RQ..PA684	1,0	0 0,40 0,24	12,5 - 12,6 9,3 - 9,4 11,1 - 11,2 9,8 - 10,2

## Notes.

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/1 MB 12,8b2

3. Edition

En

PE 8 P 100 A 320 LS 810

RQ 30G/1250 PA 187 R

Komb.-Nr. 0 401 848 038

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$ 

supersede 10.79

company: Daimler-Benz

engine: OM 402

188 kW (256 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke

3,4 - 3,5  
(3,35-3,55)

mm (from BDC) 1. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,6+0,1	10,2-10,4	0,3(0,6)			
300	7,4-7,6	1,3- 1,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control					
①		Setting point		Test specifications		④		Setting point		Test specifications		⑤		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12				
600	13,8-14,6	600	14,2	9,6	1295-1310	300	7,5	100	min.9,0	1250	10,6-10,7				
				4,0	1345-1375			300	7,4-7,6	600	10,6-10,8				
				1500	0-1,0			405-445=	2,0						

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 29,9 a

9. Edition

En

PE 8 ZWM 140/120 RS 19/11

RQU 375/1100 ZWA 19 DR

RQU 375/1100 ZWA 25 DR

Replaces

Firm: MTU

Engine: MB 837 A a

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

See Service Information VDT-I-420/112

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 mm (from BDC) Zyl. 8

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	373,0-378,0	11,0 (16,0)	369,0-382,0	
600	9,0	143,0-163,0	14,0 (21,0)	148,0-168,0	
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1080	-	C, Sp. 2	8 (12)		
500	-	C, Sp. 5	11 (16)		

Adjust the fuel delivery from each outlet according to the values in

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	min <sup>-1</sup> 2	Control-rod travel mm 3	Control lever deflection degrees 4	min <sup>-1</sup> 5	Control-rod travel mm 6	Control lever deflection degrees 7	min <sup>-1</sup> 8	Control-rod travel mm 9	min <sup>-1</sup> 10	Control-rod travel mm 11
max.	500	23,5-24,0	-	-	-	ca. 22	150	12,0-14,0	500	21,7-22,1
ca. 58	1100	19,0-19,5					375	5,6-6,0	700	20,9-21,5
	1130	15,0-18,0					500	2,3-3,1	1000	19,5-20,0
	1200	6,2-12,4					600	2,1-2,6	1100	19,0-19,5
	1250	0-7,8					1100	0,4-1,6	1120	max. 1 mm
	1350	0-1,8					1180	0	1130	less
		0,8								

Torque control travel dimension a = mm

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	min <sup>-1</sup> 3	min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
1080	232,0-236,0 (229,0-239,0)		500	212,0-220,0 (209,0-223,0)	-	-

Checking values in brackets

1.83

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,9 a1

1. Edition

En

PE 6 P 120 A 720 LS 470

ROV 250-1100 PA 700

Komb.-Nr. 0 402 046 295

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes\_

company: MAN

engine: D2866 KF  
265 kW

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,8-2,9$   
( $2,75-2,95$ ) mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	23,8-24,0	0,5(0,9)			
250	5,2-5,4	1,2- 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1170	15,2-17,8	-	-	-	ca. 9	100	min. 6,8	325	1,6-2,0
ca. 62	10,3 4,0 1350	1140-1150 1225-1255 0 - 1,0					250 360-420=2,0	5,2-5,4 2,0	800 1100	5,3-5,5 7,8

Torque control travel a = 1,15 mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 238,0-240,0 (235,0-243,0)	1140-1150*	LDA 500	0,4 bar 193,0-195,0 (190,0-198,0)	100	225,0-245,0 (221,0-249,0)	750 1100 900 1000	12,5+0,1 11,3+0,1 12,1+0,2 11,50,3
LDA 1100	1,0 bar 213,0-219,0 (210,0-222,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2  
9.83

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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

Testoil-ISO 4113

H1

H1A

## D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a 1 -2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..LS 470 +RQV..PA 700	1,0	0 0,40 0,24	12,5-12,6 9,3-9,4 11,1-11,2 9,8-10,2

### Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)



# Test Specifications Fuel Injection Pumps ② and Governors

**Testoil-ISO 4113**

PE 6 P 100 A 320 LS805 RQ 300/1150 PA436R (1)  
EP/RSV 575-1250 P1/817R (2)

Komb.-Nr. 0 401 846 406 (1)  
0 401 876 203 (2)

supersedes 10.78

company: Daimler-Benz

engine: OM 401

(1 = 141 kW - 192PS)  
(2 = 129 kW - 175PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,40-3,50$  mm (from BDC)  $3,35-3,55$  Zy1.6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	10,5+0,1	10,1 - 10,3	0,3(0,6)	10,1 +0,1	9,3 - 9,5	n = 1230
350	7,8-8,0	2,5 - 3,0	0,3(0,5)	6,0-6,2	1,2 - 1,8	n = 575

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

436R (1)

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications (4) Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications (5) Control rod travel mm 9 rev/min 10		Torque control (3) rev/min 11 Control rod travel mm 12	
650	13,8-14,6	650	14,2	9,5	1180-1195	300	7,9	100	min. 9,4	-	-
				4,1	1250-1280			300	7,8-8,0		
				1400	0 - 1,0			360-400	=2,0		

Torque-control travel  
on flyweight assembly dimension z =

mm.

Speed regulation: At

1180-1195 min

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop (3a) rev/min 3		Fuel delivery characteristics (3b) rev/min 4		Starting fuel delivery Idle speed (6) rev/min 6	
cm <sup>3</sup> /1000 strokes 2	cm <sup>3</sup> /1000 strokes 5	cm <sup>3</sup> /1000 strokes 7	Control rod travel mm	Control rod travel mm	Control rod travel mm	Control rod travel mm	Control rod travel mm
(1) 1130	101,0 - 103,0 (99,0 - 105,0)	650	-	-	100	110,0 - 130,0 (106,0 - 134,0)	./.

Checking values in brackets

7.83

**B. Governor Settings**

817R (2)

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel
1	2	mm	4	5	mm	7	8	mm	10	mm
lose	800	0,3-1,0				ca. 30	575	4,7	**	
	x =	4,0					200	min. 19		
ca. 63	9,1	1265-1275				575	4,6-4,8			
	4,1	1290-1305				570-630	= 2,0			
	1400	0,3-1,7				650	0 - 1			
⑤										

①A

\*\* Set idle-speed auxiliary spring at 2,0 mm control-rod travel  
The numbers denote the sequence of the tests  
then 1/4 turn back

**C. Settings for Fuel Injection Pump with Fitted Governor**

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to rev/min						
rev/min	cm <sup>3</sup> /1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 1230	93,0-95,0 (91,0-97,0)	1265-1275*	⑥a		100	110,0-130,0		
					1300	4,1 mm RW Streug. max. 4 (6)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**Test oil-ISO 4113****B. Governor Settings**

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
⑤										

The numbers denote the sequence of the tests

**C. Settings for Fuel Injection Pump with Fitted Governor**

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min						
rev/min	cm <sup>3</sup> /1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

En H4

H4

# **Specifications** **Injection Pumps ②** **Governors**

**40**

WPP 001/4MB 12,8 e

6. Edition

En

PE 8 P 100 A 320 LS 810 RQ 300/1150 PA 187 R (1)  
 RQV300-1150 PA 227 R (2)  
 RQV350-1250 PA 251 R (3)

supersedes 0.82

company: Daimler-Benz

engine OM 402

(3) 188 kW (256 PS)

1-8-7-2-6-3-5-4 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## **A. Fuel Injection Pump Settings**

Port closing at prestroke (3,35-3,55) mm (from BDC) 1. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes (1 u. 2) 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes (3) 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,3+0,1	10,0-10,2	0,3(0,6)	11,0+0,1	10,1-10,3	n = 1230
300	7,5-7,7	1,4-2,2	0,3(0,5)	7,8-8,0	1,5-2,1	n = 350

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

RQ..PA 187 R (1)

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12
650	13,8-14,6	650	14,2	9,3 4,0 1400	1195-1210 1235-1265 0 - 1,0	300	7,5	100 300 405-445	min.9,2 7,5-7,7 = 2,0	-	-

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

1195-1210 min

1 mm less control rod travel

## **C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm <sup>3</sup> /-1000 strokes 2				cm <sup>3</sup> /-1000 strokes 5		cm <sup>3</sup> /1000 strokes/mm 7
1150	100,0-102,0 (98,0-104,0)	500		600	77,5-82,5 (75,5-84,5)	100	110,0-130,0

Checking values in brackets

7.83

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Testoil-ISO 4113

H5

H5

# B. Governor Settings

RQV..227 R (2)

MB 12,8

-2-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min.9,0	300	0,4-1,5
ca.62	9,3 4,0 1350	1190-1200 1260-1290 0 - 1,0				360-390	300	7,4-7,6	500 1000 1250	2,6-3,2 5,7-6,1 8,2

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	102,0-104,0 (100,0-106,0)	1190-1200*	600	82,0-87,0 (80,0-89,0)	100	110,0-130,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

**Testoil-ISO 4113**

# B. Governor Settings

RQV..PA 251 R (3)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1250	15,2-17,8	-	-	-	ca.20	100	min.8,5	1285	8,3
ca.66	9,9 4,7 1500	1280-1290 1350-1380 0 - 1,0					350	6,9-7,1		
							710-770 = 2,0			

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1230	101,0-103,0 (99,0-105,0)	1280-1290*	1230	78,0-80,0 (76,0-82,0) **	100	110-130,0	-	-
					350	16,0-22,0		
					Change-over point 100-270 (80-290)			

\*\* Adjusted at the inner lever of the reduced-delivery stop

Checking values in brackets

\* 1 mm less control rod travel than col 2

En

H6

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 12,8 g

2. Edition

En

Testoil-ISO 4113

PE 8 P 100 A 320 LS 810

RQ 750 PA 374 R

supersedes 1.78

RQ 900 PA 310 R

company: Daimler-Benz

engine: OM 402

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1  
0 - 45-90-135-180-225-270-315<sup>0±0,5°</sup> (±0,75°)

138 kW (187PS)

108 kW (147PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>340-350</sup>  
(335-355) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery m. PA374 cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery m. PA310 cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,0+0,1	9,6 - 9,8	0,3 (0,6)	11,0	9,7 - 9,9	n = 850
350	7,8-8,0	1,7 - 2,3	0,3 (0,7)	+0,1 7,4-7,6	1,7 - 2,3	n = 300

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

RQ.. PA374R

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 24	10,0 4,6 850	750-755 780-790 0 - 1	-	-	-	-	-	-	750	3,8
									-	-

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
700	96,0 - 98,0 (94,0 - 100,0)	750-755 *			100	130,0-150,0 (126,0-154,0)		./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

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H7

H7

PA310R

# B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 36	10,0 4,3 1050	905-910 935-945 0 - 1	-	-	-	-	-	-	900	5,6
-	-	-	-	-	-	(3a)	-	-	-	-

Torque control travel a = - m/n

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
850	97,0 - 99,0 (95,0 - 101,0)	905-910*			100	110 - 130		
					Increase up to 4.2-4.4 mm control-rod travel Max. dispersion 4 (6)			

\* 1 mm less control rod travel than col. 2

Checking values in brackets

# B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
						(3a)				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

\* 1 mm less control rod travel than col. 2

Checking values in brackets

En 118

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 12,8 n

3. Edition

En

**Testoil-ISO 4113**

PE 8 P 100 A 320 LS 819 RSV 350-1250 P0/822

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$ 

Komb.-Nr. 0 401 878 107

supersedes 8.81

company: Daimler-Benz

engine: OM 402

165 kW (224 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

<sup>3,4 - 3,5</sup>  
 (3,35-3,55)

mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	9,6-9,7	8,7 - 8,9	0,3(0,6)			
350	7,5-7,7	2,1 - 2,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.31	350	7,6	1230	9,6+0,1
	x = 4,5						**		1050	9,9+0,2
							450-510 = 2,0		850	10,3+0,2
⑤ ca.58	8,6	1270-1280								
	4,0	1330-1345								
	1400	0,3 - 1,7								

\*\* Set idle-speed auxiliary spring at 2 mm control-rod travel

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1230	87,0-89,0 (85,0-91,0)	1270-1280*	800	84,0-88,0 (82,0-90,0)	100	110 - 130 (	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 16,0 g

3. Edition

En

**Testoil-ISO 4113**

PE 10 P 100 A 320 LS 821

RQV 350-1250 PA 378R (1)

RQV 350-1000 PA 384R (2)

supersees 81

company Daimler-Benz

engine OM 403

(1 - 311 PS)

(2 - 270 PS)

 10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2  
 0 - 45 - 72 - 117 - 144 - 189 - 216 - 261 - 288 - 333<sup>0</sup>  $\pm 0,50(0,75)^0$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

 Port closing at prestroke  $3,40-3,50$  mm (from BDC)  $Zv1. 10$   
 (3,35-3,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	10,8+0,1	9,9 - 10,1	0,3(0,6)	10,5	9,1 - 9,3	n 980
350	7,8-8,0	1,4 - 2,0	0,3(0,5)	7,4-7,6	1,4 - 2,0	

Adjust the fuel delivery from each outlet according to the values in  .

## B. Governor Settings

RQV ..378 R (1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca. 14	100 350	min. 9,4 7,8-7,9	300 1275	0,2-0,8 8,3
ca. 66	9,8 4,0 1500	1290-1300 1360-1390 0 - 1,0				420-540 (3a)				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑧		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1230	99,0-101,0 (97,0-103,0)	12 0-1300*	1230	75,0-77,0** (73,0-79,0)	100	120-140 (116-144)	-	-
						100-270 (80-290)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

\*\* Set at the reduced-delivery stop.

7.83

H10

H10

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## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1000	15,2-17,8	-	-	-	ca.20	100 350 660-720=2,0 900	min.8,5 6,8-7,0 0 - 1	300 1025	0,4-1,4 8,3
ca.64	9,5 1250	1025-1040 1110-1140 0 - 1,0				350-430			-	-

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
980	91,0 - 93,0 (89,0 - 95,0)	1025-1040*			100 350	120 - 140 14,0 - 20,0		
			1125	3,4-3,6mmRW Streug.max.4,0(6,0)	100-270 (80-290)			

Checking values in brackets

\* 1 mm less control rod travel than col 2

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
						3a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 19,1 d 1

En 1. Edition

PE 12 P 110 A 320 LS 830 Z RQ 750 PA 374 R

Komb.-Nr. 0 401 840 051

1 - 5- 9 -8- 3 - 4 - 11- 10 - 2 - 6 -7 - 12

0 -15-60-75-120-135-180-195-240-255-300-315°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

supersedes ..

company: Daimler-Benz

engine: OM 404 A

312 kW (424 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) mm (from BDC) Zyl. 12; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,0+0	1 15,6-15,8	0,4(0,8)			
300	7,7-7,9	1,3-1,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	13,0 5,4 850	750-755 785-795 0-1,0	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

750-755 min<sup>-1</sup>1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/~1000 strokes 2	rev/min 3	rev/min 4	cm³/~1000 strokes 5	rev/min 6	cm³/1000 strokes/mm 7
700	156,0-158,0 (153,0-161,0 )	-	-	-	100	145,0-165,0

Checking values in brackets

7.83

Testoil-ISO 4113

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H12

H12

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 19,1 ml  
3. Edition

En

PE 12 P 110 A 320 LS 832

RQV350-1150 PA 493 R

12.82  
supersedes  
Daimler-Benz  
comp. 404 A  
engine: 386 kW (525 PS)

Komb.-Nr. 0 401 840 067

1 - 5-9- 8 - 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0 -15-60-75-120-135-180-195-240-255-300-315°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

**Testoil-ISO 4113**

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,2-3,4$  (3,15.3,35) mm (from BDC) Zyl.12; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	13,1+0,1	14,0-14,2	0,4 (0,8)			
350	7,5-7,7	1,8- 2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in  .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 18	100	min. 8,6	300	1,4-1,6
ca. 66	12,1 4,0 1450	1185-1195 1295-1325 0 - 1,0					350 690-750= 2,0	7,0-7,2	600 850 1150	3,6-3,9 5,1-5,4 7,9

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1130	0,7 bar 140,0-142,0 (137,0-145,0)	1185-1195*	LDA 500	0 bar 121,0-123,0 (118,0-126,0)	100	130,0-150,0 (126,0-154,0)	-	-
			LDA 1130 **	0,7 bar 99,0-103,0 (96,0-106,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

# D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

MB 19,1 m 1

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 12 P.. LS 832 + .. PA 493 R	0,7	0 0,4 0,33	13,1-13,2 12,3-12,4 12,9-13,0 12,5-12,7

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

\*\* Adjusted at the inner lever of the reduced-delivery stop

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 20,9 e

En 3. Edition

Testoil-ISO 4113

PE 12 P 110 A 520 LS838

RQ 750 PA392R (1)

RQ 900 PA404R (2)

supersedes 2.81

company: MAN

engine:

(1) Nr. 7020 (283kW) 385 PS

(2) Nr. 7060 (335kW) 455 PS

12 - 1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7  
0 - 45 - 60 - 105 - 120 - 165 - 180 - 225 - 240 - 285 - 300 - 345  $\pm 0,5^\circ$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC)  $\gamma$  1. 12  
3,00-3,10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery m. 392R (1) cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery m. 404R (2) cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,3-11,4	14,7 - 14,9	0,4(0,8)	11,4-11,5	15,4 - 15,6	n = 850
250	7,4-7,6	1,1 - 1,7	0,4(0,7)	3,8-4,0	1,4 - 2,0	n = 250

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

RQ.. 392R (1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 30	10,3	750-755							750	5,3
	7,2	770-780								
						③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)	Torque-control travel (5) Control rod travel mm		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
700	147,0-149,0 (139,0-152,0)	750-755*			775	7,2 mm RW Streug.max.6(9)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

H15

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H15

**B. Governor Settings**

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
-	10,4	900-905	-	-	-	-	-	-		
	5,0	931-941								
	1000	0 - 1,0				(3a)				

Torque control travel a = mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
850	154,0-156,0 (151,0-159,0)	900-905*	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

**B. Governor Settings**

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
						(3a)				

Torque control travel a = mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col 2

①

# Test Specifications Fuel Injection Pumps ① and Governors

Wp 001/4 Vol 10,0 b 4

2. Edition

En

**Testoil-ISO 4113**

PE 6 P 100A320 RS 100 W

RQV 250-1100 PA 232/2R (1)

superseded 10.80

RS 100 X

RQV 250-1100 PA 232/2R (2)

company Volvo

engine TD 100 A

Port-closing test with/without ROBO diagram  
Special instructions on the reverse side.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

 Port closing at prestroke  $2,55-2,75$  mm (from BDC)  
 $2,60-2,70$ 

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,7 - 13,4	0,5			2,5 $\pm$ 0,1** (max. 2,2-2,9)
600	9	6,1 - 7,3				
	12	11,3 - 12,7				
	15	16,5 - 18,2				
200	9	4,2 - 5,2				

Adjust the fuel delivery from each outlet according to the values in  

\*\* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly

## B. Governor Settings

RQV... 232/2 R

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8				ca. 12	100	min. 7,6		
							250	5,9-6,1		
							320-380	=2,0		
ca. 47	12,0 4,0 1350	1140-1150 1230-1260 0 - 1,0				③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
(1) LDA 700	0,6 bar 145,0-148,0 (143,0-150,0)	1140-1150*	(1) LDA 700	0 bar 114,0-119,0 (112,0-121,0)	100	240		
(2) LDA 700	0,4 bar 153,0-156,0 (151,0-158,0)		(2) LDA 700	0 bar 115,0-118,0 (113,0-120,0)	250	11 - 15 Dispersion max. 2,5		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

H17

H17

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# D. Adjustment Test for Manifold Pressure Compensator

VOL 10,0 b 4

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
100 W + 232/2R	0,32 - 0,36	0,12 - 0,18	
100 X + 232/2R	0,38 - 0,41	0,16 - 0,22	

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 10,6a

3. Edition

En

Testoil-ISO 4113

PE 6 P 100 A 320 LS 841  
Komb.-Nr. 0 401 876 243

RSV 650-1150 P. 1/820 R

supersede 31.80

company Daimler-Benz

engine OM 401

150 kW (204 PS)

6 - 3 - 5 - 2 - 4 - 1  
0 -45 -120-165-240-285°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,20-3,30$  mm (from BD  $\phi 1. 6$ ; RW=9,0 - 12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	12,7+0,1	11,9 - 12,1	0,3(0,6)			
650	6,1-6,3	0,8 - 1,3	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in  

★ Set auxiliary idle spring at 2.0 mm control-rod travel.

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 4,0				ca. 32	650	6,2 **	1130	12,7-12,8
							660-715	= 2,0	600	12,7-12,9
ca. 58		1160-1170 = 11,7 1195-1210 = 5,1 1350 = 0,3 - 1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	5	6	7	8	9	
1130	119,0 - 121,0 (117,0 - 123,0)	1160-1170*	-	-	100	110 - 130	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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H149

H19

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAC 11,0 k

1. Edition

En

PES 6 P 110 A 720 RS3024 RQV 300/600-1050 PA342KR

PA344KR

PES 6 P 110 A720/3RS3036 RQV 300/600-1050 PA365KR

PA366KR

PLE-Maß = 0,740"-0,820"

supersedes

company:

Mack

engine:

ETA 676 B

(306 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	14,3+0,1	22,1-22,3	0,4			
300	5,0-5,2	1,2-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1070 1150 1200 1280	15,5-18,0 6,0-11,0 0 - 6,8 0	-	-	-	ca. 19	250 300 400 580 700 830	9,8-11,3 7,5- 8,5 2,5- 5,0 2,5- 5,0 0,8- 2,0 0	300 400 900 1070	0,6-1,8 -600 = 3,1-3,6 5,8-6,2 8,2

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1000	1,7 bar 221,0-223,0	1090-1100*	LDA 800 500 LDA 600 300	1,7 bar 223,5-226,5 235,5-238,5 0 bar 143,0-146,0 114 -122 (PLE)	100 300	ca. 11,5mmRW ca. 5 mmRW dispersion max. 4	1050 900 700 600 500	14,4 14,4 14,7 15,2 14,9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.83

# D. Adjustment Test for Manifold Pressure Compensator

MAC 11,0 k - 2 -

Test at n = 600 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
S 3024 mit 342KR und 344KR S 3036 mit 365KR und 366KR	0,4	1,08-1,09	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 Vol.12,0c

6. Ausgabe

En

**Testoil-ISO 4113**

PE 6 P 120 A 320 RS 3032 RQV 250-1100PA355/2R  
RS 3032Y 250-1100

supersedes 1.79

company: Volvo

engine: TD 120 C

Testing with T nozzles and fuel lines 8 x 2 x 1000  
according to ..W 400/305

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke		mm (from BDC)		Zyl. 6		Spring pre-tensioning (torque-control valve)
Rotational speed rev/min	Control rod travel mm	Fuel delivery 3032 cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery 3032Y cm <sup>3</sup> /100 strokes	
1	2	3	4	2	3	6
700	12,0-12,1	21,8 - 22,1	0,4(0,8)	11,4-11,5	20,1 - 20,4	2,5+ 0,1**
250	5,3-5,5	0,9 - 1,3	0,3(0,6)	5,3-5,5	0,9 - 1,3	(max.2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in  

\*\* In the case of greater dispersion after the delivery-valve spring pre-tension accordingly.

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1100	15,2-17,8	-	-	-	ca.10	100	mind.6,9	350	1,4-2,0
ca. 45	11,0 4,0 1320	1140-1150 1225-1255 0 - 1,0					250 300-360=2,0	5,3-5,5 2,0	650 1170	3,7-4,0 8,3
						3a				

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed	Fuel delivery characteristics		Starting fuel delivery		Torque-control	
rev/min	cm <sup>3</sup> /1000 strokes	limitation intermediate speed	high idle speed	cm <sup>3</sup> /1000 strokes	idle switching point	cm <sup>3</sup> /1000 strokes	travel	Control rod travel
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 218,0-221,0 (215,0-224,0)	1140-1150*	LDA 700	0 bar 148,0-152,0 (145,0-155,0)	100	410,0-460,0	-	-
"Y" 700	201,0-204,0 (198,0-207,0)	1140-1150*	700	148,0-152,0 (145,0-155,0)	250	9 - 13 ** Dispersion max.3(6)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

H22

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H22

**D. Adjustment Test for Manifold Pressure Compensator**

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
 increasing  
 XXXXXX

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
3032 + 355/2R	0,90	0,55 0,14 0	12,0 - 12,1 11,4 - 11,5 9,2 - 9,4 9,1 - 9,2
3032 Y + 355/2R	0,49	0,14	11,1 - 11,2 9,2 - 9,3

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 VOL 12,0 g 2

1. Edition

En

PE 6 P 120 A 320 RS 3075 RSV 650-750 P 4/421

Komb.-Nr. 0 401 876 718

supersedes

company Volvo

engine T1D 120 FG

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,8±0,1	24,4-24,6	0,5(0,9)			2,5±0,1
650	4,0-4,2	2,2-2,6	0,5(0,7)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	ca. 33	675	6,1	-	-
	x = 2,25						675	6,0-6,2		
	660-700 = 2,0									
ca. 37	10,8	750-755								
2a	4,0	775-785								
	925	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit Note: changed to ... rev/min 3	3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm <sup>3</sup> /1000 strokes 2		4	5	6	7	8	9
700	244,0-246,0 (241,0-249,0)	750-755*	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

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②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SAU 12,0 d  
2. Edition

En

PES 6 P 120 A 420 LS 3049 RQ 300/1000 PA 423 DR

1 - 4 - 2 - 6 - 3 - 5 je  $60^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )  
Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

superseded 10.80

company: Saurer

engine: D 4 KT  
225 kW

Komb.-Nr. 0 402 046 716

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Distance cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,7+0,1	20,0-20,4	0,5(0,8)			
300	4,4-4,6	1,9-2,5	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
700	15,6-16,4	700	16,0	9,7 4,0 1200	1045-1060 1090-1120 0-1,0	300	4,5	100 300 400-440=2,0	min.5,9 4,4-4,6 440=2,0	1000 700 800 900	10,7-10,8 11,8-11,9 11,6-11,8 11,0-11,3

Torque-control travel on flyweight assembly dimension a =  mm Speed regulation: At  1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm <sup>3</sup> /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm <sup>3</sup> /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm <sup>3</sup> /1000 strokes/mm 7	
LDA 1000	1,2 bar 200,0-204,0 (197,0-207,0)	-	-	LDA 700 LDA 400	1,2 bar 215,0-219,0 (212,0-222,0) 0 bar 102,0-106,0 (99,0-109,0)	100	215,0-235,0 =13,5-13,7 mm RW

Checking values in brackets

7.83

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Testoil-ISO 4113

# D. Adjustment Test for Manifold Pressure Compensator

SAU 12,0 d -2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 P..LS3049 +RQ..PA 423 DR	1,2	0 0,45 0,25	11,8-11,9 8,4- 8,5 10,9-11,0 9,2- 9,3

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)



# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 d 2

2. Edition

En

PE 6 P 120 A 320 RS 3050 RQV 250-1025 PA 611  
Komb.-Nr. 0 401 846 751

supersedes 82

company Volvo

engine: TD 120 FC

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,4 - 2,5$  mm (from BDC) bei RW 9,0 - 12,0 mm  
(2,35 - 2,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0+0,1	23,7 - 24,0	0,5(0,9)			2,5 $\pm$ 0,1 (2,2 - 2,9)
250	3,8-4,0	2,2 - 2,6	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1080	15,2-17,8	-	-	-	ca. 8	100	min. 5,3	200	0,6-0,9
ca. 64	12,0 4,0 1300	1085-1095 1150-1180 0 - 1,0					250	3,8-4,0	475	3,9-4,5
							300-360 = 2,0		670	6,4-6,6
									940	7,5
						3a			1025	

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	1,2 bar 237,5-239,5 (234,5-242,5)	1085-1095*	LDA 700	0 bar 142,0-144,0 (139,0-147,0)	100	20,0-21,0 min RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

VOL 12,0 d 2 -2-

Testoil-ISO 4113

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PESP..RS 30/50 with..PA 611	0,67	1,20	13,0 - 13,1
			9,2 - 9,3
			12,2 - 12,3
		0,3	10,5 - 10,7

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications

## Fuel Injection Pumps ①

### and Governors

WPP 001/4 FIA 13,8 i  
3.Edition

En

PE 6 P 120 A 720 RS 3069 RQV 300-1000 PA 501  
Komb.-Nr. 0 401 846 728

supersedes 3.82

company: Fiat

engine: 8210.22.269

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

### A. Fuel Injection Pump Settings

Port closing at prestroke <sup>3,5-3,6</sup>  
(3,45-3,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,3+0,1	19,6-19,9	0,5(0,9)			
300	6,0-6,2	1,5-2,1	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1045	15,2-17,8	-	-	-	ca. 10	100	min. 7,6	250	0,2-0,5
ca. 65	11,3	1040-1050					300	6,0-6,2	500	2,9-3,5
	4,0	1115-1145							750	5,1-5,4
	1250	0-1,0				350-455			1000	7,6
						③a				

Torque control travel a =      mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1000	0,7 bar 196,0-199,0 (193,0-202,0)	1040 - 1050	LDA 1000	0 bar 146,0-149,0 (143,0-152,0)	100	175,0-195,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

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# D. Adjustment Test for Manifold Pressure Compensator

FIA 13,8 i

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3069 + RQV..PA 501	0,42	0,70 0 0,35	11,5-11,6 12,3-12,4 9,4-9,5 10,1-10,5

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full load control rod travel)

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 FIA 13,8 h

4. Edition

En

PE 6 P 120 A 720 RS 3069 RQ 300/1000 PA 502

supersedes 3.82

company: Fiat

engine: 8210.22.373

Komb.-Nr. 0 401 846 729

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (3,45-3,65) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,3+0,1	19,6-19,9	0,5(0,9)			
300	6,0-6,2	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
650	19,2-20,8	650	20,0	11,3	1045-1060	300	6,1	100	min. 7,6	1000	12,0-12,1
VH=	max. 46°			4,0	1130-1160			300	6,0-6,2	600	12,0-12,2
				1250	0 - 1,0			365-405	=2,0		

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

1045-1060 min<sup>-1</sup>1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes / mm 7
LDA 1000	0,7 bar 196,0-199,0 (193,0-202,0)	-		LDA 1000	0 bar 146,0-149,0 (143,0-152,0)	100	175,0-195,0

Checking values in brackets

7.83

Testoil-ISO 4113

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J7

J7

# D. Adjustment Test for Manifold Pressure Compensator

FIA 13,8 h

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P . . RS 3069 +RQ . . PA 502	0,42	0,70 0 0,35	11,5-11,6 12,3-12,4 9,4- 9,5 10,1-10,5

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 12,0 a  
5. Edition

En

**Testoil-ISO 4113**

PES 6 P 120 A 320 RS 3070 RQV 250-1100 PA 495  
Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

supersedes 1.83

company: RVI

engine: MIDR 063540

223 kW (304 PS)

Komb.-Nr. 0 402 046 719

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} (3,45-3,65) \\ 3,50-3,60 \end{matrix}$  mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,9-13,0	19,4 - 19,7	0,5(0,8)			
250	5,2-5,4	1,5 - 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in  

Mark for start of pump delivery on tester body 12° after start of  
pump delivery, cylinder No. 1 = 9,0 - 12,0 mm.

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100 1400	15,2-17,8 0 - 1	-	-	-	ca. 12	100 250	min. 6,8 5,2-5,4	200 500 850 1150	0,3-0,6 3,0-3,2 5,0-5,2 8,4
ca. 66	11,9 4,0	1160-1170 1235-1265				290-400 ③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 194,0-197,0 (191,0-200,0)	1160-1170	LDA 1100	0 bar 151,0-154,0 (148,0-157,0)	100	130,0-165,0  100-170 (80-190)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.83

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# D. Adjustment Test for Manifold Pressure Compensator

RVI 12,0 a - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PES 6 P..RS 3070 + RQV..PA 495	0,27	0,70 0 0,22	12,2 - 12,3 12,9 - 13,0 10,6 - 10,7 11,2 - 11,4

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)



①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 f  
2. Edition

En

PE 6 P 120 A 320 RS 3071

RQV 250-1100 PA 371/2 R

superserie 80

compa Volvo

engine TD 120 G

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,55-2,75) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	1,4+0,1	20,5-20,8	0,5(0,9)			2,5±0,1 (2,2-2,9)  **
250	5,6-5,7	2,2-2,6	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

In the case of greater dispersion after the delivery-valve spring pre-tension  
\*\* accordingly.

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1100	15,2-17,8	-	-	-	ca. 12	100 250	min. 7,1 5,6-5,7	200 500 800 1100	0,7-0,9 2,9-3,2 5,0-5,3 7,7
ca. 46	10,4 4,0 1350	1160-1170 1235-1265 0 - 1,0				275-400 (3a)				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 205,0-208,0 (202,0-211,0)	1160-1170 *	LDA 700	0 bar 157,0-161,0 (154,0-164,0)	100	230,0-270,0 = 20,0-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

J11

JAA

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# D. Adjustment Test for Manifold Pressure Compensator

VOL 12,0 f - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 3071 +RQV...PA371/2R	0,57	0,90 0 0,33	11,0-11,1 11,4-11,5 9,0-9,1 9,9-10,1

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 VOL 12,0 g 1

1. Edition

En

PE 6 P 120 A 320 RS 3075 RSV 200-1000 P 4/421

Komb.-Nr. 0 401 876 730

supersedes -

company Volvo

engine TID 120 F/PP

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,3+0,1	23,6-23,9	0,5(0,9)			2,5±0,1 (2,2-2,9)
200	5,9-6,1	2,3-2,9	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	ca. 20	200	5,5	-	-
	x = 4,0						200	5,9-6,1		
							2 65-325	= 2,0		
ca. 58	10,3	1040-1050								
2a	4,0	1065-1095								
	1230	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
700	235,5-238,5 (2 32,5-241,5)	1040-1050*	-	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

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J13

J 43

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,4 i 3  
2. Edition

En

**Testoil-ISO 4113**

PES 6 P 120 A 820 LS 3077 RQ 300/1100 PA 603

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

supersedes 8.81  
Daimler-Benz  
company OM 407 HA  
engine 206 kW (280 PS)  
Komb.-Nr. 0 402 046 727

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	18,4 - 18,6	0,5(0,9)			
300	5,0-5,2	1,4 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,1-20,8	650	20,0	10,7 4,0 1260	1145-1160 1190-1220 0 - 1	300	5,1	100 300 355-395=2,0	min. 6,5 5,0 - 5,2	1100 950 600	11,7 + 0,1 12,0 + 0,2 12,3 + 0,1
VH = max. 46°											

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation At 1145 - 1160 min<sup>-1</sup>

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /100 strokes 7
LDA 1100	0,75 bar 184,0 - 186,0 (181,0 - 189,0)		LDA 600	0,75 bar 187,0 - 193,0 (184,0 - 196,0)	100	175,0 - 195,0 (171,0-199,0)
			LDA 500	0 bar 145,0 - 147,0 (142,0 - 150,0)		

Checking values in brackets

# D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

MB 11,4 i 3 -2-

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
..LS 3077 with ..PA 603	0,75	0,53 0,42 0	12,3 - 12,4 11,7 - 11,8 10,8 - 11,0 10,3 - 10,4

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 ROL 12,2 a  
3. Edition

En

supersedes 8.81

company Rolls Royce

engine C 6 . 200 G

Komb.-Nr. 0 401 846 744

**Testoil-ISO 4113**

PE 6 P 130 A 320 RS 3078 RQ 750 PA 584  
1 - 4 - 2 - 6 - 3 - 5 je  $60^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$   
Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,4-3,5$  mm (from BDC)  
(3,35-3,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,7+0,1	26,7 - 27,1	0,5(0,9)			
300	4,9-5,0	3,8 - 4,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,7 4,0 850	750-755 772-780 0-1,0	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a = mm

Speed regulation At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /100 strokes 7
700	267,0 - 271,0 (264,0 - 274,0)	-	-	-	100	290,0-340,0

Checking values in brackets

8.83

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 KHD 9,6 b

2. Edition

En

Testoil-ISO 4113

PES 6 P 110 A 720 RS 3079

RSV 300-1150 P 8/486

A 486

supersede 9.82

company KHD

engine: F 6 L 413 FRC  
199 kW (271 PS)  
bei 2300 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,8 - 2,9}{(2,75 - 2,95)}$  mm (from BDC)  $\frac{9,0}{12,0}$  mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	14,2+0,1	17,7 - 18,1	0,4 (0,8)			
300	7,2-7,3	1,3 - 1,9	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 13	300	6,7	1150	14,2+0,1
	X =	2,75							350	15,4+0,6
							300	7,2-7,3	550	14,2+0,1
							300-360 = 2,0			
⑤ ca. 48	13,2	1190-1200								
	4,0	1220-1250								
	1390	0,3 - 1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA 1150	0,9 bar 177,0-181,0 (174,0-184,0)	1190-1200*		LDA 800	0,9 bar 175,0-179,0 (172,0-182,0)	100	190,0-210,0		
				LDA 500	0 bar 123,0-125,0 (120,0-128,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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J17

J17

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES6P..RS3079 mit .. P8/486 A 486	0,9	0 0,57 0,30	14,2 - 14,3 11,9 - 12,0 13,8 - 13,9 12,4 - 12,8

### Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)



# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 RVI 12,0 b  
2. Edition

En

superseded 8.81  
RVI  
company MIDS (R) 063540  
engine

**Testoil-ISO 4113**

PES 6 P 120 A 320 RS 3082 RQ 750 PA 597  
Komb.-Nr. 0 402 046 723

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,5 - 3,6$  mm (from BDC)  
(3,45-3,65)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,8+0,	25,1 - 25,3	0,5(0,9)			
250	6,5-6,7	1,50 - 2,10	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications		Setting point		Test specifications					
rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	13,8 4,0 900	750-755 787- 800 0 - 1,0	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /100 strokes 7
700	251,0 - 253,0 (248,0 - 256,0)	-	-	-	-	-

Checking values in brackets

8.83

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 12,0 d  
2. Edition

En

PE 6 P 120 A 320 RS 3088 Z RSV 200-900 P4/421 R

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 12.82  
company Volvo-Penta  
engine TMD 120 B  
Komb.-Nr. 0 401 876 725

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke

2,6 - 2,7  
(2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,7+0,1	19,3-19,7	0,5 (0,9)			2,5 <sup>+</sup> 0,1 (2,2-2,9)
250	3,6-3,8	1,6-2,0	0,5 (0,8)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	ca.22	250	3,2	-	-
	X = 4,0									
ca.53	10,7	940- 950					250	3,6-3,8		
	4,0	970-1000					300-360	= 2,0		
2a	1130	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	193,0-197,0 (191,0-199,0)	940-950*		900	193,0- 197,0 (190,0-200,0)	100	390-440 = 20,0- 21,0 mmRW	250	3,7

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.83

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J20

J20

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BAO 31,8 a

1. Edition

En

PE 12 P 130 A 120 RS 3094-1 RQV 400-750 PA 632

1 - 12 - 9 - 4 - 5 - 8 - 11 - 2 - 3 - 10 - 7 - 6

0 - 45 - 60 - 105 - 120 - 165 - 180 - 225 - 240 - 285 - 300 - 345<sup>0</sup>  $\pm 0,5^0$  ( $\pm 0,75^0$ )

supersedes

company: Baudouin

engine: V 12 P 15 SRCN

Komb.-Nr. 0 401 830 704

Values only apply to test nozzle-and-holder  
assembly 1 688 901 919 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke

3,2 - 3,3

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4+0,1	30,6-31,0	0,5(0,9)			
400	3,5-3,7	2,1-2,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 24	10,4 4,0 900	750-755 780-790 0 -1,0	-	-	-	ca. 6	100 400 690-750= 2,0	min.5,1 3,5-3,7	375 450- 650 750	0,5-0,7 2,0-2,1 4,3

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤		
rev/min	cm³/1000 strokes	rev/min ④a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
700	306,0-310,0 (303,0-313,0)	750-755*	-	-	400	21,0-27,0 (18,0-30,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

J21

J21

BOSCH

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# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 M8 11,4 o

3. Edition

En

Testoil-ISO 4113

PES 6 P 120 A 820 LS 3095 RSV 350-750 P1/487

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersc 14.82

company Daimler-Benz

engine OM 407 A

169 kW (230 PS)

Komb.-Nr. 0 402 076 717

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 4,0 - 4,1 \\ (3,95-4,15) \end{matrix}$  mm (from BDC)  $\begin{matrix} \text{Zyl. 6; RW=9,0 - 12,0 mm} \end{matrix}$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	12,4+0,1	19,6 - 19,8	0,5(0,8)			
350	5,7-5,9	3,0 - 4,0	0,8(0,7)			

Adjust the fuel delivery from each outlet according to the values in  .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	700	0,3-1,0	-	-	-	-	-	-	-	-
	x =	2,25								
ca. 33 ⑤	11,4 4,0 900	750-755 785-795 0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
730	196,0-198,0 (193,0-201,0)	745-760 *	-	-	100	170,0-190,0	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.83

J22

J22

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# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 STE 9,7 a  
2. Edition.

En

PE 6 P 110 A 721 RS 3102 RQV 250-1200 PA 257-1  
Komb.-Nr. 0 401 856 702

supersedes 1.82  
company: Steyr  
engine: WD 615.84  
180 kW (245 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,8-2,9$  mm (from BDC)  $RW = 9,0-12,0$  mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,6+0,1	15,1-15,3	0,4(0,8)			
250	7,0-7,2	1,3-1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 14	100	min. 8,5	200	0,7-0,9
ca. 48	11,6	1240-1250					250	7,0-7,2	530	3,7-3,9
	4,0	1310-1340					350-410	= 2,0	870	5,3-5,7
	1450	0 - 1,0							1200	8,1

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 151,0-153,0 (148,0-156,0)	1240-1250 *	LDA 700	0,7 bar 147,0-151,0 (144,0-154,0)	100	210,0-240,0	-	-
			LDA 700	0 bar 99,0-103,0 (96,0-106,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

8.83

Testoil-ISO 4113

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# D. Adjustment Test for Manifold Pressure Compensator

STE 9,7 a - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3102 + RQV..PA257-1	0,70	0 0,46 0,33	12,6-12,7 10,2-10,3 12,0-12,1 10,8-11,0

## Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications

## Fuel Injection Pumps ① and Governors

WPP 001/4 SSC 14,0 a

2. Edition

En

PE 12 P 100 A 520 RS 3103 RQV 375-1000 PA 639  
Komb.-Nr. 0 401 840 708

supersedes 11.82

company: SSCM

engine: Poyaud V 12-520 AN  
219 kW (298 PS)

1- 8- 5-10- 3 - 7- 6 - 11- 2 - 9 - 4 - 12

0-15-60-75-120-135-180-195-240-255-300-315 °  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

**Testoil-ISO 4113**

### A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,8-2,9}{(2,75-2,95)}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,5 $\pm$ 0,1	9,3-9,5	0,3(0,6)			
375	7,6-7,8	0,8-1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

### B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1070	15,2-17,8	-	-	-	ca. 17	100 375	min. 9,2 7,6-7,8	350 570 780 1000	0,8-1,1 3,5-3,8 5,0-5,4 7,6
ca. 63	10,5 4,0 1250	1040-1050 1085-1115 0 - 1,0				375-475 (3a)				

Torque control travel a = mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel Control rod travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
1000	93,0-95,0 (91,0-97,0)	1040-1050*	-	-	100	230,0-250,0 (226,0-254,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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K1

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 UNI 9,6 a 1

2. Edition

En

PES6P 110 A 320 RS 3105-1  
Komb.-Nr. 0 402 046 737

RQ 275/1150 PA 653

supersedes 11.82  
company: IVECO-Unic  
engine: 8220-32  
129 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,5+0,1	12,2-12,5	0,4(0,75)			
275	5,9-6,1	1,5-2,0	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH=	19,2-20,8 max. 46°	600	20,0	10,5 4,0 1400	1195-1210 1245-1275 0 - 1,0	275	6,0	100 275 350-390= 2,0	min. 7,5 5,9-6,1	1150 600	11,5-11,6 11,5-11,7

Torque-control travel  
on flyweight assembly dimension a = 0 mm

Speed regulation: AI

1195-1210 min<sup>-1</sup>

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 8	cm³/1000 strokes / mm 7
LDA 1150	0,7 bar 122,0-125,0 (119,5-127,5)	-	LDA 400	0 bar 68,0-71,0 (65,0-74,0)	100	160,0-180,0 (156,0-184,0)

Checking values in brackets

9.83

Testoil-ISO 4113

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K2

M2



# D. Adjustment Test for Manifold Pressure Compensator

UNI 9,6 a 1 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6P..RS 3105-1 + RQ..PA 653	0,70	0 0,27 0,22	11,5-11,6 9,4- 9,5 11,0-11,1 9,7-10,1

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 10,0 e

2. Edition

En

PE 6 P 110 A 320 RS 3109 Z RSV 200-900 P 1/421  
Komb.-Nr. 0 401 876 729

supersedes 11.82

company Volvo-Penta  
engine TMD 100 B  
177 kW (241 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6  
(3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,6+0,1	14,9-15,1	0,4 (0,8)			
250	4,2-4,4	1,7-2,1	0,3 (0,6)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 19	250	3,7-3,9	-	-
	x =	4,0					250	4,2-4,4		
	ca. 46	10,6	940-950					270-330=2,0		
2a	4,0	970-1000								
	1140	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	5	6	7	8	9	
700	149,0-151,0 (146,0-154,0)	940-950	-	-	100	20,0-21,0 mm RW	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

9.83

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Testoil-ISO 4113

K4

K4

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,4 q

2. Edition

En

PES 6 P 120 A 820 LS 3112 RSV 350-1 100 PQ/500

supersedes 1.83

company Daimler-Benz

engine OM 407 A

206 kW (280 PS)

Komb.-Nr. 0 402 076 718

Values only apply to test nozzle-and-holder assembly  
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1  
(3,95-4,15) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,5+0,1	17,5-17,7	0,5 (0,9)			
350	4,7-4,9	1,6-2,2	0,8 (1,2)			
600	-					
500	-	C. Sp. 4 u. 5	0,75(1,2)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	350	4,8		
	x = 3,25						420-460	= 2,0		
ca. 48	10,5	1135-1145								
	4,0	1215-1245								
②a	1300	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	4	5	6	7	8	9	10
LDA 1100	0,7 bar 175,0-177,0 (172,0-180,0)	1135-1145*	LDA 600	0,7 bar 177,0-183,0 (174,0-186,0)	100	150,0-170,0 (146,0-174,0)			
			LDA 500	0 bar 143,0-145,0 (140,0-148,0)					

Checking values in brackets

\* 1 mm less control rod travel than col 2  
9.83

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K5

14 5

# D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

MB 11,4 q

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6P..LS3112 + RSV..PO/500	0,70		11,8 - 11,9
		0,40	10,7 - 10,9
		0,50	11,6 - 11,7
		0	10,5 - 10,6

Notes.

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 STE 12,0 b

2. Edition

En

PE 8 P 110 A 121 LS 3113 RQ 300-1100 PA 646  
Komb.-Nr. 0 401 853 700  
1-5-4-8-6-3-7-2 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes 11.82  
company: STEYR  
engine: WD815.64  
240 kW (326 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,8-2,9$   
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,0+0,1	15,8-16,0	0,4(0,8)			
300	6,1-6,3	1,5-2,1	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Full-load speed regulation: Setting point rev/min 3		Control rod travel mm 4		Test specifications rev/min 6		Idle speed regulation: Setting point rev/min 7		Control rod travel mm 8		Test specifications rev/min 10		Torque control rev/min 11		Control rod travel mm 12	
600		15,6-16,4		600		16,0		11,0 4,0 1400	1135-1150 1200-1230 0 - 1,0	300		6,2		100 300 400	min.7,7 6,1-6,3 460=2,0	-		-	

Torque-control travel  
on flyweight assembly dimension a = 0 mm

Speed regulation: At

1135-1150 min

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
LDA 1100	0,9 bar 158,0-160,0 (155,0-163,0)	-		LDA 500	0 bar 111,0-113,0 (108,0-116,0)	100	240,0-280,0

Checking values in brackets

K7

9.83

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# D. Adjustment Test for Manifold Pressure Compensator

STE 12,0 b

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE8P..LS3113 +..PA646	0,55	0,90 0 0,48	11,5-11,7 12,0-12,1 9,7- 9,8 10,9-11,1

Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications

## Fuel Injection Pumps ① and Governors

WPP 001/4 STE 12,0 b 1  
2. Edition

En

PE 8 P 110 A 121 LS 3113 RQV 250-1100 PA 652  
Komb.-Nr. 0 401 858 701  
1 - 5 - 4 - 8 - 6 - 3 - 7 - 2 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

superseded 83  
company Steyr  
engine WD 815.64  
240 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

### A. Fuel Injection Pump Settings

Port closing at prestroke  $2,8 - 2,9$   
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,0+0,1	15,8-16,0	0,4(0,75)			
250	6,1-6,3	1,5-2,1	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

### B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm/rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 11	100	min. 7,3	200	0,7-0,9
ca. 61	11,0 4,0 1350	1140-1150 1195-1225 0-1,0					250	6,1-6,3	500	3,7-4,1
							415-475 = 2,0		800	5,4-5,7
									1100	7,9

Torque control travel a = 0,4 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5a		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,9 bar 158,0-160,0 (155,0-163,0)	1140-1150*	LDA 500	0,9 bar 159,0-163,0 (157,0-165,0)	100	240,0-280,0	1100	12,0+0 1
							810	12,0+0 3
							640	12,2+0 2
			LDA 500	0 bar 111,0-113,0 (108,0-116,0)			500	12,4+0 1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

K9

K5

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# D. Adjustment Test for Manifold Pressure Compensator

STE 12,0 b 1

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 3113 + RQV..PA 652	0,90	0 0,60 0,48	12,4 - 12,5 9,7 - 9,8 11,8 - 12,0 10,8 - 11,0

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)



# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 FIA 17,2a

1. Edition

En

PE 8 P-120 A 920/5 LS 3801 RQ 300/1200 PA 356 R

Kob.-Nr. 0 401 848 711  
0 401 848 703

supersedes -

company: Fiat  
8280.02.405  
engine: 257 kW (350 PS)1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,5 - 3,6$   
(3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,3-9,4	17,3 - 17,7	0,5 (0,9)			
300	6,7-6,9	2,8 - 3,6	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4				Control rod travel mm 8		Control rod travel mm 10		Control rod travel mm 12
650	15,6-16,4	650	16,0	8,3 4,0 1400	1245-1260 1280-1310 0-1,0	300	6,8	100 300 415-455= 2,0	min. 8,3 6,7-6,9	1200 650	9,3-9,4 9,3-9,5

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

1245-1260 min<sup>-1</sup>1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery idle speed rev/min 6	
	cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes/mm 7
1200	173,0 - 177,0 (170,0 - 180,0)	-	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

9.83

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 17,2a1  
1.Edition

En

PE 8 P 120 A 920/5 LS 3801 RQV 300-1200 PA 357 P

Komb.-Nr. 0 401 848 704

1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes

company: Fiat

engine: 8280

257 kW (350 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke		mm (from BDC)					
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning	
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm	
1	2	3	4	2	3	6	
1200	9,3-9,4	17,3 - 17,7	0,5(0,8)				
300	6,7-6,9	2,8 - 3,6	0,8(1,2)				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 10	100	min. 8,3	250	0,9-1,1
ca. 63	8,3 4,0 1450	1240-1250 1310-1340 0-1,0				330-430	300	6,7-6,9	570 880 1200	4,0-4,4 5,7-5,9 8,3

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational-speed		Fuel delivery characteristics		Starting fuel delivery		Torque-control	
Control-rod stop		limitation		high idle speed		idle switching point		travel	
Test oil temp. 40°C (104°F)		intermediate speed						Control rod travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9	
1200	173,0-177,0 (170,0-180,0)	1240-1250*	-	-	100	19,5-21,0 mm RW	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications

## Fuel Injection Pumps ②

### and Governors

WPP 001/4 FIA 17,2a2  
1. Edition

En

PE8P120A920/5LS3801 RQ 300/1200 PA 474 R

Komb.-Nr. 0 401 848 713

1-8-4-3-6-5-7-2 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes -

company: Fiat

engine: 8280.22.001

331 kW (450 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke  $3,5 - 3,6$  mm (from BDC)  
(3,45-3,65)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,9+0,1	22,1-22,5	0,5(0,9)			
300	6,7-6,9	2,8-3,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications Control rod travel mm 10 rev/min 9		Torque control rev/min 11 Control rod travel mm 12	
650	19,2-20,8	650	20,0	9,9	1245-1260	300	6,8	100	min. 8,3	1200	10,9-11,0
VA=	max. 46°			4,0	1275-1310			300	6,7-6,9	650	10,9-11,1
				1400	0-1,0			390-420	2,0		

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

1245-1260 min

1 mm less control  
rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		Control rod travel mm 7
1200	221,0-225,0 (218,0-228,0)	-	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

9.83

Testoil-ISO 4113

②

# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 14,0 e

5. Edition

En

PE8P110A320 LS 3802

RQ 300/1150 PA 187-3

RQ 300/1150 PA 187-5

supersedes 7.81

company: Daimler-Benz

engine: OM 422

206 kW (280 PS)

Komb.-Nr. 0 401 848 708  
1-8-7-2-6-3-5-4 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$ 

See Service Information VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(3,95-4,15)

mm (from BDRW) = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,3+0,1	12,7-12,9	0,4(0,8)	12,3-0,	13,1-13,3	
300	8,0-8,1	1,5-2,1	0,4(0,7)	8,0-8,	1,5-2,1	
600	12,3+0,1	C, Sp. 4 u. 5	(0,9)	12,3+0,	C, Sp. 4 u.5	
*with return throttle			* without return throttle			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,0-14,0	650	13,5	11,3 4,0 1350	1195-1210 1235-1265 0 - 1,0	300	8,1	100 300 420-460 550	min. 10,2 8,0-8,2 = 2,0 max. 1,8	-1	

Torque-control travel  
on flyweight assembly dimension a = mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1150 (1)	127,0-129,0 (124,0-132,0)	600		600	118,0-122,0 (115,0-125,0)	100	130,0-150,0

Checking values in brackets

9.83

Testoil-ISO 4113

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K14

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## B. Governor Settings

MB 14,6 e -2-

(2)

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
(1)		Setting point		Test specifications		Setting point		Test specifications		(3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	13,0-14,0	650	13,5	11,3 4,0 1350	1195-1210 1235-1265 0-1,0	300	8,1	100 300 420-460 550	min. 10,2 8,0-8,2 =2,0 max. 1,8	-	-

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1195-1210 min<sup>-1</sup>

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
(2)		(3a)		(3b)		(6)	
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3	4	5	6	7	Control rod travel
1150 (2)	131,0-133,0 (128,5-135,5)	600	600	112,0-116,0 (109,0-119,0)	100	130,0-150,0 (126,0-154,0)	

Checking values in brackets

**Testoil-ISO 4113**

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
(1)		Setting point		Test specifications		Setting point		Test specifications		(3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
(2)		(3a)		(3b)		(6)	
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3	4	5	6	7	Control rod travel

En Checking values in brackets

# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 14,6 d

4. Edition

En

supersedes 5.81

company: Daimler-Benz

engine: OM 422

184 kW (250 PS)

PE 8 P 110 A 320 LS 3802 RQ 300/1150 PA 187-4

Komb.-Nr. 0 401 848 714

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$ 

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

 Port closing at prestroke  $(3,95-4,15)$  mm (from BDC) Zyl. 8  
 $4,00-4,10$ 

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,6+0,1	10,9 - 11,1	0,4(0,8)			
300	8,3-8,5	1,1 - 1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 4		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
650	13,2-14,0	650	13,6	10,6	1190-1205	300	7,7	100 min. 9,3	-	-	-	-	-
1350	0-1			4,0	1235-1265			300 7,6-7,8 410-450 = 2,0					

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: A 1190-1205 min<sup>-1</sup>

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
1150	109,0 - 111,0 (106,0 - 114,0)	600	600	600	94,0 - 98,0 (91,0 - 101,0)	100	130,0-150,0

Checking values in brackets

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 14,6 n 1  
2. Edition

En

PE 8 P 110 A 320 LS 3802 RQ 900 PA 310 R  
Komb.-Nr. 0 401 848 738

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ} + 0,5^{\circ} (+0,75^{\circ})$

supersedes 7.81  
company Daimler-Benz  
engine OM 422  
180 kW (245 PS)

See Service Information VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDE) 1. 8; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
850	13,9+0,1	14,9-15,1	0,4(0,8)	13,9+0,1	15,2-15,4	
300	8,2-8,4	1,1-1,7	0,4(0,7)	8,2-8,4	1,4-2,0	
*with return throttle			* without return throttle			

Adjust the fuel delivery from each outlet according to the values in  .

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Test specifications Control rod travel mm 5		Test specifications rev/min 6		Test specifications Control rod travel mm 10		Test specifications rev/min 9		Control rod travel mm 12	
-	-	-	-	12,9 6,3	900-905 940-950	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

900-905 min<sup>-1</sup>1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm <sup>3</sup> /1000 strokes 2		cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7		Control rod travel mm 12	
(1) 850	149,0-151,0 (146,0-154,0)	-	-	-	-	100	130,0-150,0

Checking values in brackets

9.83

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## B. Governor Settings

MB 14,6 n 1

- 2 - (2)

Checking of slider PRG check (1)		Full-load speed regulation (4)				Idle speed regulation (5)				Torque control (3)	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Setting point rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,9 6,3	900-905 940-950	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation At 900-905 min<sup>-1</sup>

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery idle speed (6)	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm Control rod travel 7
(2) 850	152,0-154,0 (149,0-157,0)	-	-	-	100	140,0-160,0 (136,0-164,0)

Checking values in brackets

**Testoil-ISO 4113**

## B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation (4)				Idle speed regulation (5)				Torque control (3)	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6	Setting point rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery idle speed (6)	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm Control rod travel 7

Checking values in brackets



②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 14,6n2

2. Edition

En

PE 8 P 110 A 320 LS 3802 RQ 1050 PA 310  
Komb.-Nr. 0 401 848 739  
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

supersedes 7.81  
company: Daimler-Benz  
engine: OM 422  
198 kW (269 PS)

See Service Information VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDØyl. 8; RW = 9,0-12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	14,3+0,1	15,9-16,1	0,4(0,8)	14,3+0,1	15,9-16,1	
300	8,2-8,4	1,4- 2,0	0,4(0,7)	8,2-8,4	1,4- 2,0	
		*with return throttle			* without return throttle	

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	13,3 4,0	1050-1055 1108-1118	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a = mm

Speed regulation At 1050-1055 min<sup>-1</sup>

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	Control rod travel mm 3a	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	Control rod travel mm 7
(1 u. 2) 1000	159,0-161,0 (156,0-164,0)	-	-	-	-	(1) 100	130,0-150,0
						(2) 100	140,0-160,0 (136,0-164,0)

Checking values in brackets

9.83

Testoil-ISO 4113

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 14,6n

3. Editione

En

PE 8 P 110 A 320 LS 3802 RQ 750 PA 374 R  
Komb.-Nr. 0 401 848 737  
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

supersedes 11.82

company: Daimler-Benz

engine: OM 420

154 kW (209 PS)

See Service Information VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) Zyl. 8; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,9+0,1	14,2-14,4	0,4(0,8)	13,9+0,1	14,2-14,4	
300	8,3-8,4	1,3- 1,9	0,4(0,7)	8,3-8,4	1,3- 1,9	
* with return throttle			* without return throttle			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12	
-		-		12,9 750-755 6,1 780-790		-		-		-	

Torque-control travel  
on flyweight assembly dimension a = mm

Speed regulation: AI

750-755 min<sup>-1</sup>  
1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm <sup>3</sup> /1000 strokes 2		Control rod stop mm 3a		cm <sup>3</sup> /1000 strokes 5		Control rod travel mm 7	
(1 u.2) 700		-		-		(1) 100	
142,0-144,0 (139,0-147,0)						130,0-150,0	
						(2) 100	
						140,0-160,0 (136,0-164,0)	

Checking values in brackets

9.83

Testoil-ISO 4113

K20

K20

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②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 14,6 b  
5. Edition

En

Testoil-ISO 4113

PE 8 P 110 A 320 LS 3802 RQ 300/1150 PA 490 (1)  
RQV 300-1150 PA 524 (2)

supersedes 8.80

company: Daimler-Benz

engine: OM 422

184 Kw (250 Ps)

Komb.-Nr. 0 401 848 714

0 401 848 724

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1  
0 -45 -90 -135-180-225-270-315  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $4,00-4,10$  min (from BDC) 2yl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes "1" 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes "2" 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,8-10,9	10,0 - 10,2	0,4(0,8)	11,2+0,1	10,2 - 10,4	n = 1150
300	8,1-8,3	1,1 - 1,7	0,4(0,7)	8,2-8,3	1,2- 1,8	n = 300
600	-	C, Sp. 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

RQ - 490

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
600	13,8-14,6	600	14,2	9,8	1195-1210	300	8,2	100	min.9,7	1150	10,8-10,9		
1150				4,0	1125-1255			300	8,1-8,3	600	10,8-11,0		
1350	0 - 1							420-460	=2,0				
	Breakaway							480	0 - 1				

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery idle speed rev/min 6	
	cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		Control rod travel mm 7
1150	100,0 - 102,0 ( 97,0 - 105,0)	600		600	85,0 - 89,0 (82,0 - 92,0)	100	130,0-150,0

Checking values in brackets

9.83

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K21

K21

## B. Governor Settings

RQV - 524

MB 14,6 b - 2 -

①

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 18	100 300	min. 9,7 8,2-8,3	250 550 850 1150	1,0-1,2 3,4-3,7 4,9-5,3 7,6
ca. 64	10,2 4,0 1350	1190-1200 1230-1260 0 - 1,0				330-465 (3a)				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1150	102,0-104,0 ( 99,0-107,0)	1190-1200*	600	90,0 - 94,0 (87,0 - 97,0)	100	130,0-150,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

**Testoil-ISO 4113**

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
						(3a)				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

K22

En  
K22

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6c

5. Edition

En

PE 8 P 110 A 320 LS 3802

RQV 300-1150 PA 524-2

superseded .82

RQV 300-1150 PA 524-3

company: Daimler-Benz

Komb.-Nr. 0 401 848 712

engine: OM 422

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ} \pm 0,5^{\circ}$  ( $\pm 0,75^{\circ}$ )

206 kW (280 PS)

See Service Information VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $4,0 - 4,1$  mm (from BDC) Zyl. 8; RW = 9,0-12,0 mm  
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,3+0,1	12,2 - 12,4	0,4(0,8)	12,3+0,1	13,1-13,3	
300	8,1-8,3	1,3 - 1,9	0,4(0,7)	8,1-8,3	1,5- 2,1	
600	-	C, Sp. 4 u. 5	(0,9)	-	C, Sp. 4 u. 5	
	*with return throttle				*without return throttle	

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 21	100	min.10,1	250	1,0-1,2
ca. 66	11,3 4,0	1190-1200 1235-1265				330-465	300	8,1-8,3	550 850 1150	3,4-3,7 5,0-5,3 7,7

Torque control travel a =   mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
(1) 1150	122,0-124,0 (119,0-127,0)	1190-1200*	600	114,0-118,0 (111,0-121,0)	100	130,0-150,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

Testoil-ISO 4113

**B. Governor Settings**

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 21	100	min. 10,1	250	1,0-1,2
ca. 66	11,3 4,0	1190-1200 1235-1265				330-465 (3a)	300	8,1-8,3	550 850 1150	3,4-3,7 5,0-5,3 7,7

Torque control travel a = mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 1150	131,0-133,0 (128,5-135,5)	1190-1200*	600	112,0-116,0 (109,0-119,0)	100	130,0-150,0 (126,0-154,0)	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**Testoil-ISO 4113****B. Governor Settings**

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

Torque control travel a = mm

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Control rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

En

K24

# Test Specifications Fuel Injection Pumps ② and Governors

**40**

WPP 001/4 MB 14,6e1

1. Edition

En

PE 8 P 110 A 320 LS 38u2-1 RQ 300/1150 PA 187-11

Komb.-Nr. 0 401 848 751

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

supersedes

company: Daimler-Benz

engine: OM 422

286 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $4,0 - 4,1$  mm (from BDC)  $3,95 - 4,15$  mm; RW = 9,0-12,0 mm

Rotation speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1150	12,3+0,1	13,1-13,3	0,4(0,75)			
300	8,5-8,7	1,5- 2,1	0,45(0,75)			
600	-	C, Sp. 4 u. 5	(0,9)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications Control rod travel mm	rev/min	Setting point rev/min	Control rod travel mm	Test specifications Control rod travel mm	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	13,0-14,0	650	13,5	11,3	1195-1210	300	8,6	100	min. 10,0	-	-
				4,0	1235-1265			300	8,5-8,7		
				1350	0-1,5			430-470	= 2,0		
								500	max. 1,8		

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

1195-1210 min<sup>-1</sup>

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 30°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
1150	131,0-133,0 (128,5-135,5)	600	600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0)	

Checking values in brackets

9.83

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# Test Specifications Fuel Injection Pumps ② and Governors

En

PE 8 P 120 A 920/5 LS 3804 RQ 300/950 PA 474  
1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je  $45^{\circ} \pm 0,5^{\circ} (+0,75^{\circ})$

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

supersedes -

company: Fiat

8280.22.007

engine: 280 kW

Komb.-Nr. 0 401 848 726

**Testoil-ISO 4113**

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(3,45-3,65)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	11,1+0,1	18,5-18,7	0,5(0,9)			
300	4,9-5,1	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider FFG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH	19,2-20,8 = max 46	600	20,0	10,1 4,0 1150	995 1010 1030-1060 0 - 1,0	300	5,0	100 300 350-390 = 2,0	min. 7,5 4,9-5,1 390 = 2,0	950 600	11,1-11,2 11,1-11,3

Torque-control travel  
on flyweight assembly dimension a =

0

mm

Speed regulation: At

995-1010 min

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
LDA 950	0,7 bar 185,0-187,0 (182,0-190,0)	-	LDA 950	0 bar 138,0-140,0 (135,0-143,0)	100	210,0-230,0 (206,0-234,0)

Checking values in brackets

9.83

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L2



# D. Adjustment Test for Manifold Pressure Compensator

FIA 17,2 b - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 P.. LS 3804 + RQ..PA 474	0,70		11,1 - 11,2
		0	8,3 - 8,4
		0,36	10,4 - 10,5
		0,29	8,8 - 9,2

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6c1

1. Edition

En

PE 8 P 110 A 320 LS 3802-1 RQV 300-1150 PA 524-9

Komb.-Nr. 0 401 848 752

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

supersedes

company Daimler-Benz

engine: OM 422

206 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95 - 4,15) mm (from BDC) 7yl. 8: RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,3+0,1	13,1-13,3	0,4(0,75)			
300	8,0-8,2	1,5- 2,1	0,45(0,75)			
600	-	C, Sp. 4 u. 5	(0,9)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 21	100	min. 9,7	250	1,0-1,2
ca. 66	11,3 4,0	1190-1200 1235-1265				330-465 (3a)	300	8,0-8,2	550 850 1150	3,4-3,7 4,9-5,3 7,6

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idk speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	131,0-133,0 (128,5- 135,5)	1190-1200*	600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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L4

L4

Test 01: ISO 4113

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 17,2 b 1

1. Edition

En

PE 8 P 120 A 920/5 LS 3804 RQV 300-950 PA 475 R  
1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je  $45^0 \pm 0,5^0$  ( $\pm 0,75^0$ )

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

superseeder

company: Fiat

8280.22

engine:

280 kW

numb.-Nr. 0 401 848 730

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,5 - 3,6$   
(3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	11,1±0,1	18,5-18,7	0,5(0,9)			
300	4,9-5,1	1,3-1,9	0,8(1,2)			
950	8,3-8,4	C, Sp. 4 u. 5	(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	950	15,2-17,8	-	-	-	ca. 11	100	min. 7,5	250	1,0-1,3
ca. 64	10,1	990-1000					300	5,9-6,1	480	3,7-4,2
	4,0	1075-1105							720	5,6-5,9
	1250	0 - 1,0							950	7,7
						300-390				
						③a				

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 950	0,7 bar 185,0-187,0 (182,0-190,0)	990-1000*	LDA 950	0 bar 138,0-140,0 (135,0-143,0)	100	210,0-230,0 (206,0-234,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

L5

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L5

# D. Adjustment Test for Manifold Pressure Compensator

FIA 17,2 b 1 -2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 P..LS 3804 + RQV..PA 475 R	0,70		11,1 - 11,2
		0	8,3 - 8,4
		0,36	10,4 - 10,5
		0,29	8,8 - 9,2

## Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ② and Governors

PE 6 P 110 A 320 LS 3805 RQ 300/1150 PA 187-6

Komb.-Nr. 0 401 846 749

1 - 6 - 3 - 5 - 2 - 4

0 - 75-120-195-240-315<sup>0</sup>  $\pm 0,5^0$  ( $\pm 0,75^0$ )

See Service Information VDT-I-401/102

supersedes 11.82

company: Daimler-Benz

engine: OM 421

159 kW (216 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $4,0 - 4,1$  mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm  
(3,95-4,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery * cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery * cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	12,5+0,1	12,8-13,0	0,4(0,8)	12,5+0,1	13,4-13,6	
300	8,3-8,5	1,2-1,8	0,4(0,7)	8,3-8,5	1,2-1,8	
600	-	C, Sp. 4 u. 5	(0,9)	-	C, Sp. 4 u. 5	
*with return throttle			* without return throttle			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	13,2-14,0	650	13,6	11,5 4,0 1350	1195-1210 1240-1270 0 - 1,0	300	8,4	100 300 430-470	min. 10,0 8,3-8,5 =2,0	-	-

Torque-control travel  
on flyweight assembly dimension a =  mm

Speed regulation: At 1195-1210 min 1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes/mm
1	2	3	4	5	6	7	
(1) 1150	128,0-130,0 (125,0-133,0)	600	600	600	120,0-124,0 (117,0-127,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

## B. Governor Settings

MB 11,0 c 1

- 2 - (2)

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
(1)		Setting point		Test specifications		Setting point		Test specifications		(3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	13,2-14,0	650	13,6	11,5 4,0 1350	1195-1210 1240-1270 0 - 1,0	300	8,4	100 300 430-470	min. 10,0 8,3-8,5 = 2,0	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At

1195-1210 min<sup>-1</sup>

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
(2)		(3a)		(3b)		(6)	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3		4	5	6	7
(2) 1150	134,0-136,0 (131,5-138,5)	600		600	116,0-120,0 (113,0-123,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

**Testoil-ISO 4113**

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
(1)		Setting point		Test specifications		Setting point		Test specifications		(3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
(2)		(3a)		(3b)		(6)	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3		4	5	6	7

En Checking values in brackets

# Test Specifications Fuel Injection Pumps ② and Governors

PE 8 P 120 A 320 LS 3807 RQ 900 PA 310 R  
Komb.-Nr. 0 401 848 743  
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes 3.81  
company: Daimler-Benz  
engine: OM 422 A  
229 kW

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $4,9 - 4,1$  mm (from BDC) Zyl. 8  
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	17,9-18,1	0,5(0,9)			
300	4,8-5,0	1,2- 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		Control rod travel mm 9		Control rod travel mm 12	
-	-	-	-	11,0 4,0	900-905 945-955	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a = mm

Speed regulation: All 900-905 min<sup>-1</sup>

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm <sup>3</sup> /-1000 strokes 2				cm <sup>3</sup> /-1000 strokes 5		cm <sup>3</sup> /1000 strokes/mm 7	Control rod travel
850	179,0 - 181,0 (176,0 - 184,0)	-	-	-	-	100	160,0 - 180,0 (156,0 - 184,0)

Checking values in brackets

# Test Specifications Fuel Injection Pumps ② and Governors

PE 8 P 120 A 320 LS 3807 RQ 1050 PA 310  
Komb.-Nr. 0 401 848 742  
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

supersedes 3.81  
company Daimler-Benz  
OM 422 A  
engine: 228 kW (310 PS)

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

## A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,3+0,1	17,3 - 17,5	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,3 4,0	1050-1055 1090-1105	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a = mm

Speed regulation: At

1050-1055 min<sup>-1</sup>

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1000	173,0 - 175,0 (170,0 - 178,0)	-		-	-	100	180,0 - 200,0 (176,0 - 204,0)

Checking values in brackets

9.83

Testoil-ISO 4113



# Test Specifications

## Fuel Injection Pumps ②

### and Governors

WPP 001/4 MB 14,6h3  
2. Edition

En

PE 8 P 120 A 320 LS 3807 RQ 750 PA 374 R  
Komb.-Nr. 0 401 848 741  
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes 10.82  
company: Daimler-Benz  
OM 422 A  
engine: 196 kW (266 PS)

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke  $4,0 - 4,1$  mm (from BDC)  $1,8$ ; RW =  $9,0 - 12,0$  mm  
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,1+0,1	18,4 - 18,6	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,1 4,0	750-755 785-795	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

750-755 min<sup>-1</sup>1 mm less control  
rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
700	184,0 - 186,0 (181,0 - 189,0)	-	-	-	100	180,0-200,0 (176,0-204,0)

Checking values in brackets

9.83

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 14,6 g 1

5. Edition

Er

PE 8 P 120 A 320 LS 3807  
Komb.-Nr. 0 401 848 747

RQ 300/1150 PA 511-2

supersedes 1.83  
company: Daimler-Benz  
engine OM 422 LA  
276 kW (375 PS)

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $4,0 - 4,1$  mm (from BDC) Cyl. 8  
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,6±0,1	18,9 - 19,1	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			
1150	-	C, Col.1+2	0,75			
600	-	C, Col.4+5	0,75			
500	-					

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Checking of slider PRG check: ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH-	19,1-20,8 max. $46^\circ$	600	19,9	10,6 4,0	1195-1210 1250-1280	300	1,3	100 300 335-	min. 6,0 4,2 - 4,4 875=2,0	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1195-1210 min<sup>-1</sup>

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
LDA 900	0,7 bar 189,0 - 191,0 (186,0 - 194,0)	-	LDA 600	0,7 bar 182,0 - 186,0 (179,0 - 189,0)	100	140,0 - 160,0 (136,0-164,0)
LDA 1150	0,7 bar 185,0 - 189,0 (182,0 - 192,0)		LDA 500	0 bar 139,0 - 141,0 (136,0 - 144,0)		

Checking values in brackets

9.83

# D. Adjustment Test for Manifold Pressure Compensator

MB 14,6 g1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 3807 + RQ..PA 511-2	0,44	0,70 0 0,34	11,1 - 11,3 11,6 - 11,7 10,1 - 10,2 10,3 - 10,4

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 1 1  
3.Edition

En

PE8P120A320LS3807 RUV 300-1150PA526-2  
1-8-7-2-6-3-5-4 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

supersedes 83-

company Daimler-Benz

engine OM 422 LA

276 kW (375PS)

Komb.-Nr. 0 401 848 748

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $4,0-4,1$  mm (from BDC)  
(3.95-4.15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,6+0,1	18,9-19,1	0,5(0,9)			
300	4,8-5,0	1,2- 2,0	0,8(1,2)			
1150	-	C, Sp. 1 u. 2	0,75			
600	-	C, Sp. 4 u. 5	0,75			
500	-					

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 10	100 300	min. 6,0 4,2-4,4	250 550 850 1150	1,0-1,2 3,4-3,7 4,9-5,3 7,6
ca. 65	10,6 4,0 1350	1190-1200 1230-1260 0- 1,0				320-465				

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ travel Control rod travel mm	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
LDA 900	0,7 bar 189,0-191,0 (186,0-194,0)	1190-1200*	DA 500	0,7 bar 182,0-186,0 (179,0-189,0)	100	140,0-160,0 (136,0-164,0)	-	-
LDA 1150	0,7 bar 185,0-189,0 (182,0-192,0)		DA 500	0 bar 139,0-141,0 (136,0-144,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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L14

L14

# D. Adjustment Test for Manifold Pressure Compensator

MB 14,6 1 1

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE8P..LS3807 + .. PA526-2	0,44	0,70 0 0,34	11,1-11,3 11,6-11,7 10,1-10,2 10,3-10,4

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 K

3. Edition

En

PE 8 P 120 A 320 LS 3807 RQV 300-1150 PA 545

1-8-7-2-6-3-5-4 je 45 °  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 10.82

company Daimler-Benz

engine OM 422 A

243 kW (330PS)

Komb.-Nr. 0 401 848 732

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,7+0,1	15,7-15,9	0,5(0,9)			
300	5,2-5,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 11	100	min. 6,0	250	1,0-1,2
ca. 64	9,7 4,0 1350	1190-1200 1225-1255 0 - 1,0				325-460	300	4,5-4,7	550 850 1150	3,4-3,8 4,9-5,4 7,7

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 156,5-158,5 (153,5-161,5)	1190-1200*	LDA 900	0,7 bar 164,0-168,0 (161,0-171,0)	100	120,0-140,0 (116,0-144,0)	1150	10,7+0,1
LDA 600	0,7 bar 166,0-172,0 (163,0-175,0)		LDA 500	0 bar 137,0-139,0 (134,0-142,0)			600	11,4+0,1
							900	10,8+0,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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# D. Adjustment Test for Manifold Pressure Compensator

MB 14,6 k

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE8P..LS3807 mit ..PA 545	0,47	0,70 0 0,40	11,2-11,3 11,4-11,5 10,5-10,6 10,6-10,7

## Notes:

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 14,6 p  
1. Edition

En

PE 8 P 120 A 320 LS 3816 RSV 650-1150 P0/823

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes -

company Daimler-Benz

engine OM 422 A

206 kW

Komb.-Nr. 0 401 878703

## A. Fuel Injection Pump Settings

4,0-4,1

mm (from BDC) Zyl. 8

Port closing at prestroke

(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	9,5-9,6	14,1-14,3	0,5 (0,9)			
650	3,5-3,7	1,6-2,2	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	-	650	3,6	1150	9,5-9,6
	x = 2,0								700	10,0-10,2
									1050	9,6- 9,8
ca. 40	8,5	1160-1170								
2a	4,0	1185-1200								
	1400	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1130	141,0-143,0 (138,0-146,0)	1160-1170*		900	152,0-158,0 (149,0-161,0)	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

7.83

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Testoil-ISO 4113

L18

L18



# Test Specifications Fuel Injection Pumps ② and Governors

PE 10 P 110 A 320 LS 3818

RQ 300/1150 PA 437-2

supersedes 8 32

company Daimler-Benz

engine: OM 423

261 kW (355 PS)

Komb.-Nr. 0 401 849 705

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4  
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $4,0 - 4,1$  mm (from BDC Zyl. 10; RW=9,0 - 12,0 mm)  
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1150	12,1+0,1	12,6 - 12,8	0,4 (0,8)			
300	8,5-8,7	1,2 - 2,0	0,4 (0,7)			
600	-	C, Sp. 4 u.5	(0,9)			
900						

Adjust the fuel delivery from each outlet according to the values in

**Testoil-ISO 4113**

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,0-14,0	600	13,5	11,1 4,0 1350	1190-1205 1225-1255 0 - 1,5	300	6,1	100 300 400-440	min.7,7 6,0-6,2 = 2,0	1150 600 900	12,1+0,1 12,5+0,1 12,4+0,2

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1190 - 1205 min<sup>-1</sup>

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1150	126,0-128,0 (123,0-131,0)	-		600	114,0-118,0 (111,0-121,0)	100	140,0-160,0 (136,0-164,0)
				900	120,0-125,0 (117,0-128,0)		

Checking values in brackets

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d 1

2. Edition

En

PE 10 P 110 A 320 LS 3818-1 RQV 350-1150 PA 678

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4

0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes 3.83

company: Daimler-Benz

engine: OM 423

261 kW (355 PS)

Komb.-Nr. 0 401 849 709

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $4,0 - 4,1$  mm (from BDC) Zyl. 10  
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 5	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,5+0,1	12,2-12,4	0,4(0,8)			
350	7,9-8,1	1,4-2,2	0,4(0,7)			
600	-	C, Sp. 4 u. 5	(0,9)			
900						

Adjust the fuel delivery from each outlet according to the values in .

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 18	100	min. 10,0	300	1,2-1,4
ca. 62	10,5 4,0 1400	1190-1200 1250-1280 0-1,0				330-500	350	7,9-8,1	580	3,6-3,9
									870	5,2-5,6
									1150	7,8

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	122,0-124,0 (119,0-127,0)	1190-1200*	600	112,0-116,0 (109,0-119,0)	100	130,0-150,0	1150	11,5+0,1
1150	92,0-94,0 (89,0-97,0) **		900	113,0-118,0 (110,0-121,0)			600	12,1+0,1
							900	11,8+0,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

\*\* Adjusted at the inner lever of the reduced-delivery stop

9.83

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L20

L20

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 21,9 a 1

2. Edition

En

PE 12 P 120 A 320 LS 3819 RQ 900 PA 634

1 - 5 - 9 - 8 - 3 - 4 - 11 - 10 - 2 - 6 - 7 - 12

0 - 15 - 60 - 75 - 120 - 135 - 180 - 195 - 240 - 255 - 300 - 315° ± 0,5° (± 0,75°)

supersedes 3.85  
company: Daimler-Benz  
OM 424 A  
374 kW

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

Komb.-Nr.  
0 401 840 704

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,8+0,	18,3-18,5	0,5 (0,8)			
300	4,8-5,0	1,2-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ①				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,8 4,0 1050	900-905 932-942 max. 1,0	-	-	-	-	-	-

900 - 905 min<sup>-1</sup>Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
850	183,0-185,0 (180,0-188,0)	-	-	-	100	160,0-180,0 (156,0-184,0)

Checking values in brackets

9.83

Testoil-ISO 4113

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L21

L21

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 00 1/4 MB 21,9a

4. Edition

En

3.83

PE 12 P 120 A 320 LS 3819

RQ 750 PA 635

supersedes Daimler-Benz

company: OM 424 A

engine: 330 kW (449 PS)  
Generator1- 5- 9- 8- 3- 4- 11- 10- 2- 6- 7- 12  
0-15-60-75-120-135-180-195-240-255-300-315°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

Komb.-Nr. 0 401 840 705

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

(3,95-4,15)

Zyl. 12

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9+0,1	19,3 - 19,5	0,5(0,8)			
300	4,8-5,0	1,4 - 2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Checking of slider PRG check Control rod travel rev/min mm 1 2		Full-load speed regulation Setting point Test specifications rev/min Control rod travel mm 3 4 5 6				Idle speed regulation Setting point Test specifications rev/min Control rod travel mm 7 8 9 10				Torque control Control rod travel rev/min mm 11 12	
-	-	-	-	10,5 4,0 900	750-755 780-790 0 - 1,0	-	-	-	-	-	-

750-755 min<sup>-1</sup>Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min cm <sup>3</sup> /1000 strokes 1 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min cm <sup>3</sup> /1000 strokes 4 5		Starting fuel delivery Idle speed rev/min cm <sup>3</sup> /1000 strokes/mm 6 7	
700	193,0 - 195,0 (190,0 - 198,0)	-	-	-	-	100	160,0 - 180,0 (156,0 - 184,0)

Checking values in brackets

9.83

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